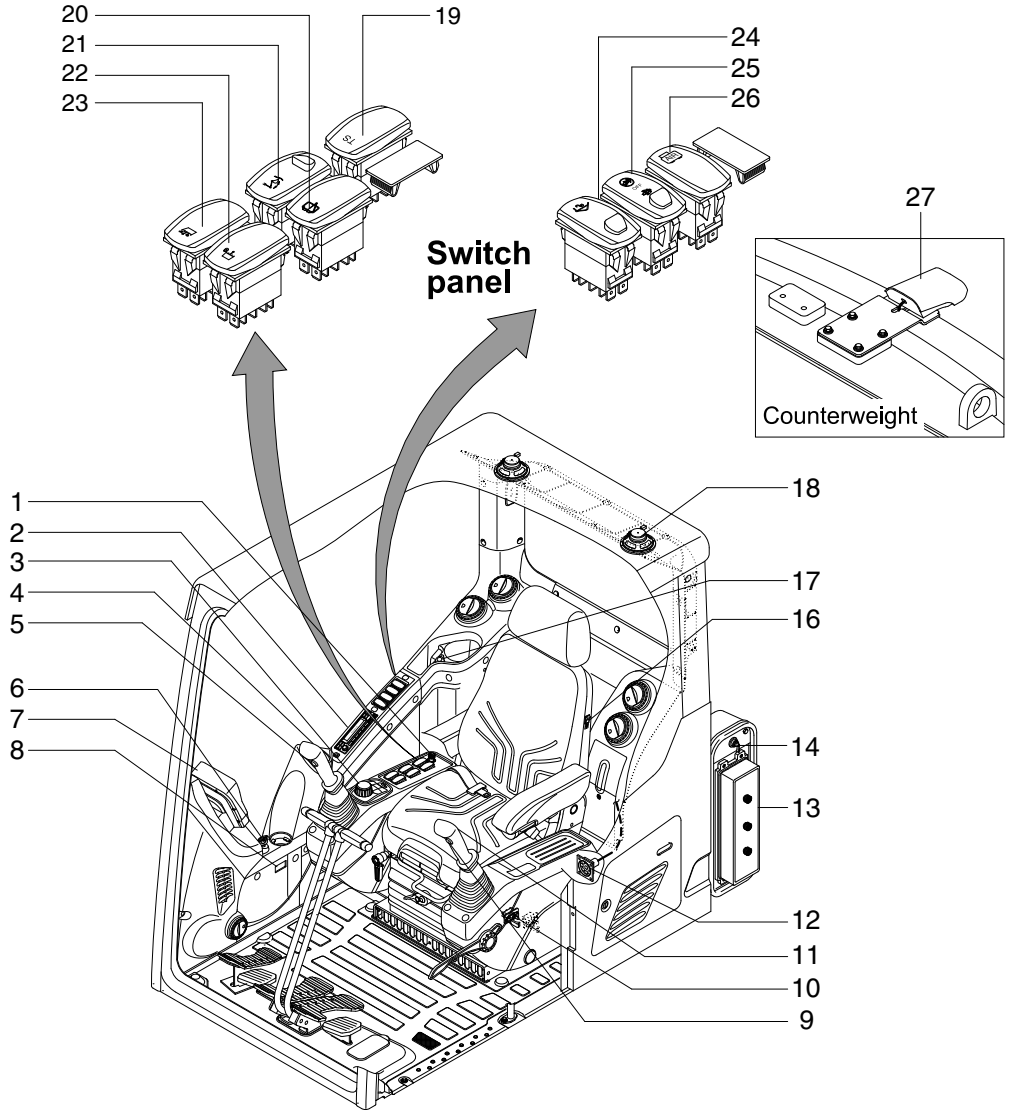
SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location 4-1
Group 2 Electrical Circuit 4-3
Group 3 Electrical Component Specification 4-23
Group 4 Connectors 4-36

GROUP 1 COMPONENT LOCATION

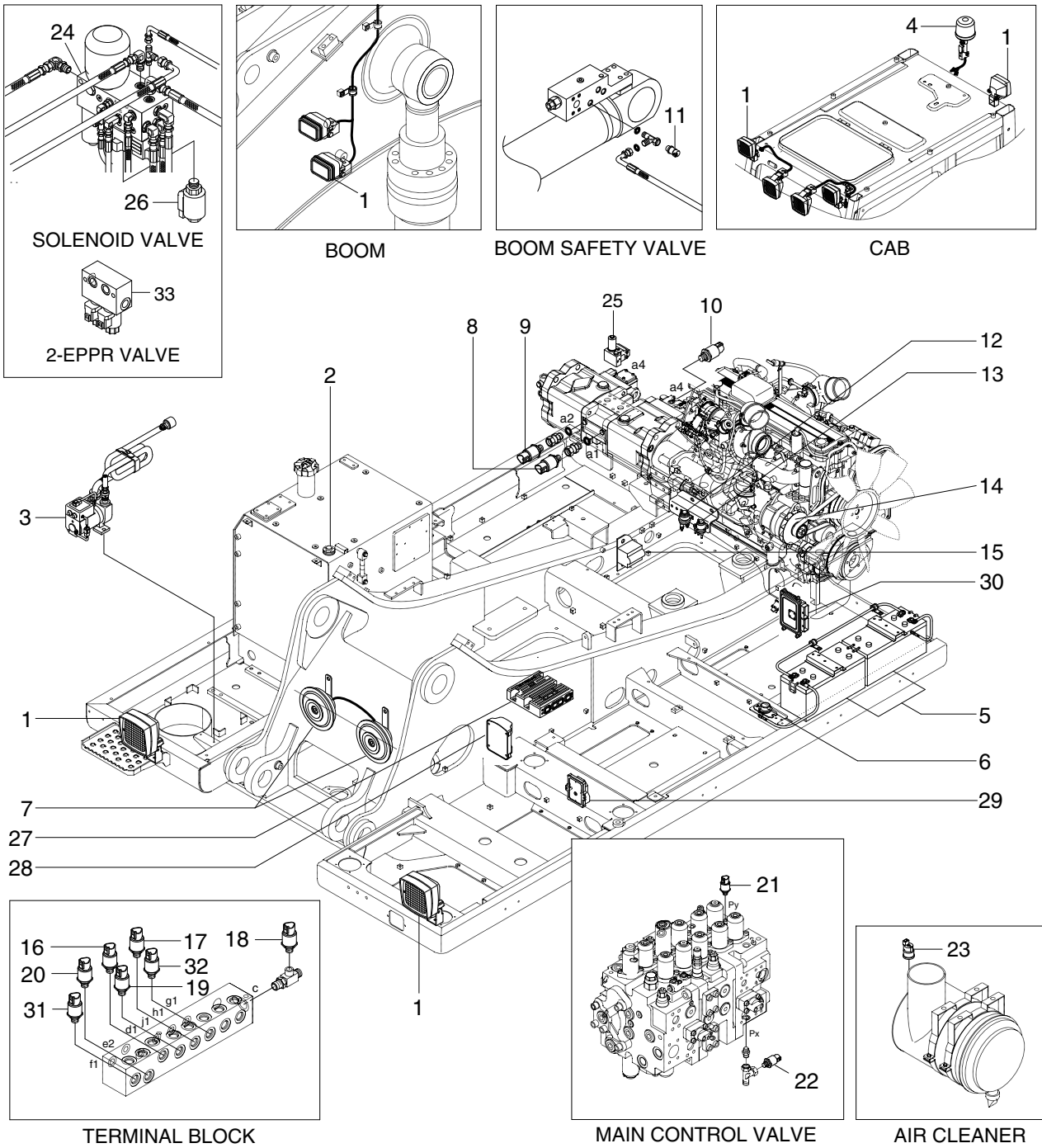
1. LOCATION 1



380A4EL01

1	Cigar lighter	10	Emergency engine stop switch	20	Lower wiper & washer switch
2	Radio & USB player	11	One touch decel switch	21	Boom floating switch
3	Jod dial module	12	RS232 & J1939 service socket	22	Swing lock switch
4	Horn switch	13	Fuse & relay box	23	Free/fine swing switch
5	Cluster	14	Master switch	24	Quick coupler switch
6	Breaker operation switch	16	Seat heater switch	25	Exhaust system cleaning switch
7	Starting switch	17	Service socket	26	Air compressor switch
8	Service meter	18	Speaker	27	Rear view camera
9	Power max switch	19	Travel straight switch		

2. LOCATION 2

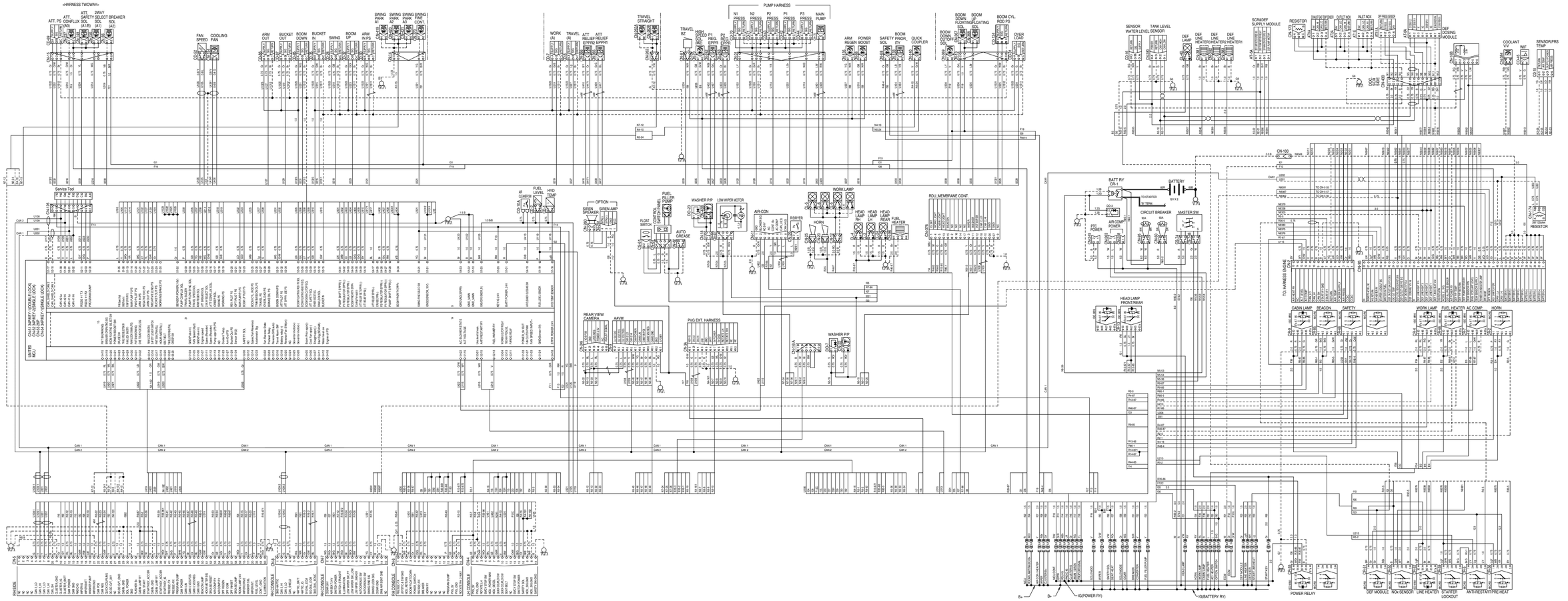


380A4EL02

1	Lamp	12	Start relay	23	Air cleaner sensor (-#00040)
2	Fuel sender	13	Heater relay	24	4 cartridge valve
3	Fuel filler pump	14	Alternator	25	Pump EPPR valve
4	Beacon lamp	15	Travel alarm buzzer	26	Boom priority EPPR valve
5	Battery	16	Arm in pressure sensor	27	United MCU
6	Battery relay	17	Boom up pressure sensor	28	RMCU assy
7	Horn	18	Swing pressure sensor	29	RDU assy
8	P1 pressure sensor	19	Boom down pressure sensor	30	View controller
9	P2 pressure sensor	20	Arm out pressure sensor	31	Bucket in pressure sensor
10	EPPR pressure sensor	21	Attach pressure sensor	32	Bucket out pressure sensor
11	Overload pressure sensor	22	Travel pressure sensor	33	2 EPPR cartridge valve

· ELECTRICAL CIRCUIT (1/3)

- MACHINE SERIAL NO. : -#0162



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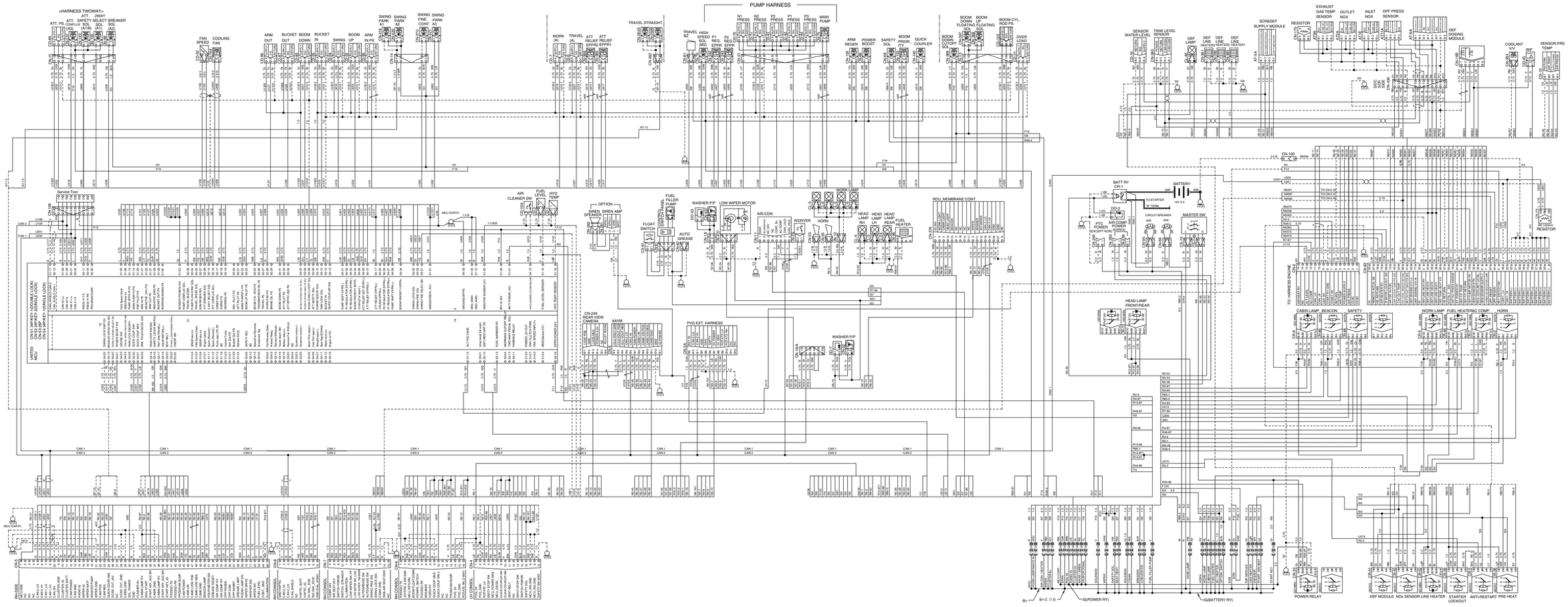
- MACHINE SERIAL NO. : #0163-#0204


PUMP HARNESS
<HARNESS TWOWAY>
Service Tool
AIR CLEANER SW
FUEL LEVEL
HYD TEMP
OPTION
SIREN SPEAKER
SIREN AMP
FUEL FILLER PUMP
FLOAT SWITCH
AUTO GREASE
WASHER PIP
LOW WIPER MOTOR
AIR-CON
WORK LAMP
HORN
HEAD LAMP RH
HEAD LAMP LH
HEAD LAMP REAR
FUEL HEATER
RDU, MEMBRANE CONT.
TRAVEL STRAIGHT
TRAVEL BZ
HIGH SPEED SOL (MO)
P1 REG EPPR
P2 REG EPPR
N1 PRESS
N2 PRESS
P2 PRESS
P1 PRESS
P3 PRESS
MAIN PUMP
ARM REGEN
POWER BOOST
SAFETY SOL
BOOM PRIOR. ITY
QUICK COUPLER
BOOM DOWN CUT-OFF
BOOM DOWN FLOATING
BOOM UP FLOATING
BOOM CYL ROD PS
OVER LOAD
WORK (A)
TRAVEL (A)
ATT RELIEF EPPR
ATT RELIEF EPPR1
FAN SPEED
COOLING FAN
ARM OUT
BUCKET OUT
BOOM IN
BUCKET IN
SWING
BOOM UP
ARM IN
SWING PARK ASS'Y
SWING PARK ASS'Y
SWING FINE CONT.
SWING PARK ASS'Y
ATT, 2PS
ATT, 2WAY SAFETY SELECT
BREAKER SOL
ATT, PS
ATT, 2WAY SOL
SENSOR WATER LEVEL
TANK LEVEL SENSOR
DEF LAMP
DEF LINE HEATING
DEF LINE HEATER
SCR&DEF SUPPLY MODULE
RESISTOR
EXHAUST GAS TEMP SENSOR
OUTLET NOX
INLET NOX
DPF PRESS SENSOR
DEF DOSING MODULE
COOLANT VIV
WIF
SENSOR,PRS TEMP
BATT RY CN-1
BATTERY
TO-STARTER M. TERM.
MASTER SW
CIRCUIT BREAKER
PTC HEATER
AIR COMP POWER
HEAD LAMP FRONT,REAR
CABIN LAMP, BEACON
SAFETY
WORK LAMP, FUEL HEATER
HORN
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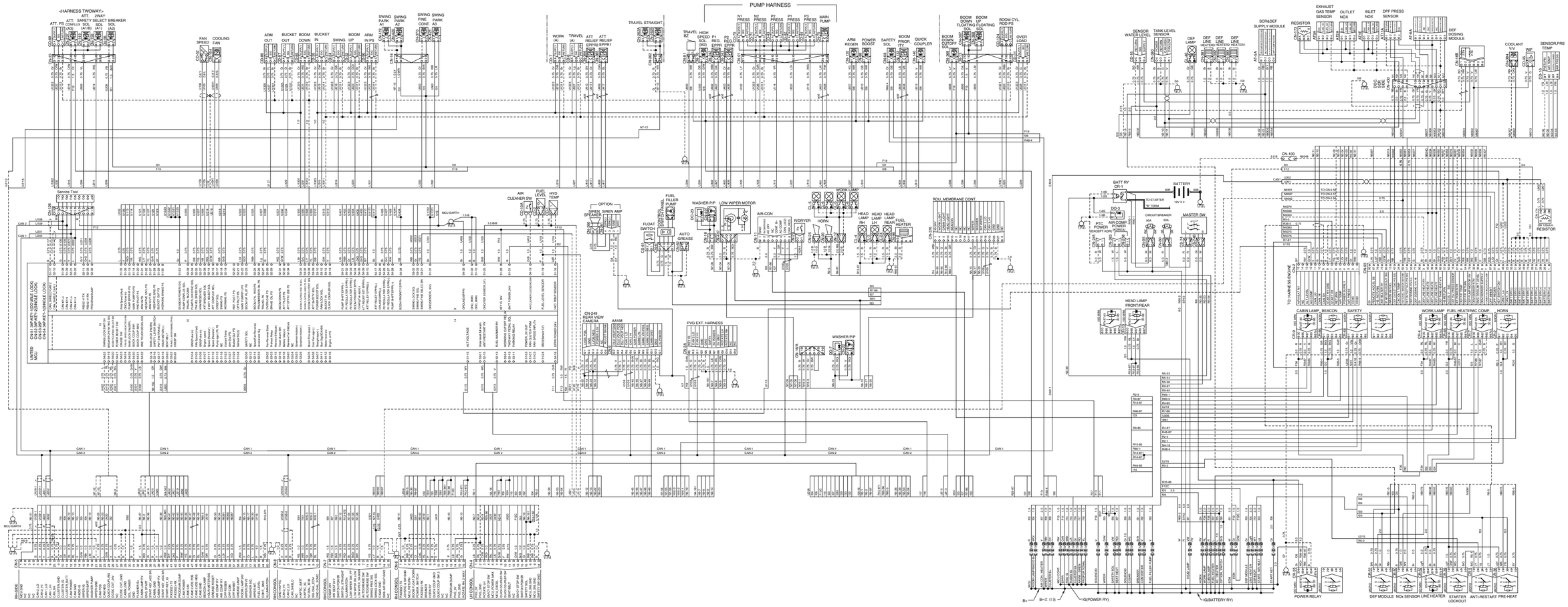
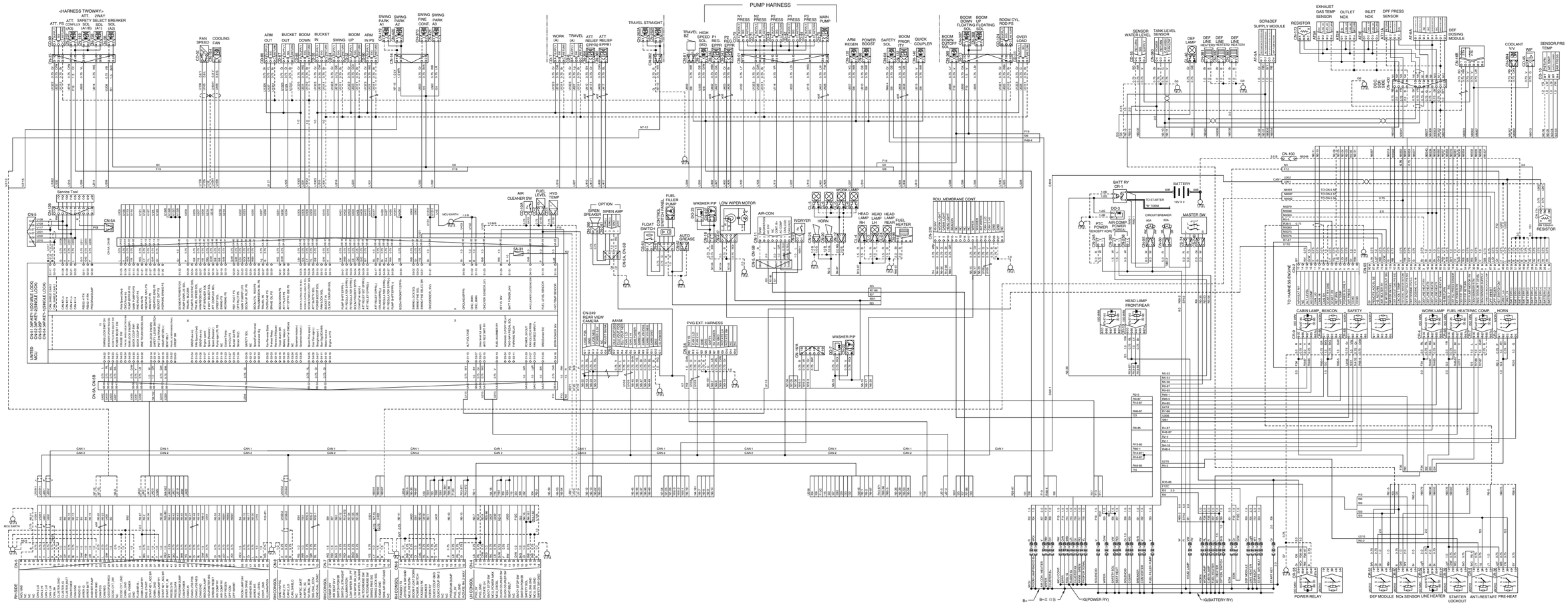
- MACHINE SERIAL NO. : #0205-#0405


PUMP HARNESS
<HARNESS TWOWAY>
ATT. 2WAY
ATT. PS
ATT. 2WAY SAFETY SELECT BREAKER SOL
ATT. PS SOL
SWING PARK ASS'Y
SWING PARK ASS'Y
SWING FINE CONT
SWING PARK ASS'Y
FAN SPEED
COOLING FAN
ARM OUT
BUCKET OUT
BOOM DOWN
BUCKET IN
SWING
BOOM UP
ARM IN
TRAVEL STRAIGHT
WORK (A)
TRAVEL (A)
ATT RELIEF
ATT RELIEF
TRAVEL BZ
HIGH SPEED SOL (MO)
P1 REG
P2 REG
N1 PRESS
N2 PRESS
P2 PRESS
P1 PRESS
P3 PRESS
MAIN PUMP
ARM REGEN
POWER BOOST
SAFETY SOL
BOOM PRIOR. ITY
QUICK COUPLER
BOOM DOWN CUT OFF
BOOM DOWN FLOATING
BOOM UP FLOATING
BOOM CYL ROD PS
OVER LOAD
Service Tool
AIR CLEANER SW
FUEL LEVEL
HYD TEMP
OPTION
SIREN SPEAKER
SIREN AMP
FUEL FILLER PUMP
FLOAT SWITCH
AUTO GREASE
WASHER PIP
LOW WIPER MOTOR
AIR-CON
RADIRYER
HORN
WORK LAMP
HEAD LAMP RH
HEAD LAMP LH
HEAD LAMP REAR
FUEL HEATER
RDU, MEMBRANE CONT.
MCU EARTH
CAN 1
CAN 2
UNITED MCU
CN-01 3AP,KEY - DISABLE LOCK
CN-02 3AP,KEY - ENABLE LOCK
CN-03 3BP
CN-04 4AP,KEY - SURFACE LOCK
CAN GRID(CDA)/HT
CAN GRID(CDA)/LT
CAN H (1)
CAN L (1)
CAN H (2)
CAN L (2)
RS232 TX
RS232 RX
RS232 GND
ENGINE POWER(ON)
TRAVEL SPEED SOL
TRAVEL ALARM
ARM OUT PS
ARM IN PS
BOOM DOWN PS
BOOM UP PS
SENSOR POWER(5V)
TRAVEL SPEED SOL
TRAVEL PS
BRAKE OIL PS
ATT PS
ATT PS
ATT RELIEF SOL
ATT RELIEF SOL
CREEP SOL
SWING SOL
HORNSS PS
SPV ASS'Y PS
SPV ASS'Y PS
BOOM SOL ASS'Y PS
BOOM UP ASS'Y PS
ENGINE PROTECT
ENGINE PROTECT
ENGINE PROTECT

- MACHINE SERIAL NO. : #0406-


PUMP HARNESS
«HARNESS TWOWAY»
ATT. 2WAY
ATT. PS
ATT. CONFLUX
SAFETY SELECT
BREAKER SOL
ARM OUT
BUCKET OUT
BOOM DOWN
BUCKET IN
SWING
BOOM UP
ARM IN
SWING PARK ASSY
SWING PARK ADJ
SWING FINE CONT
SWING PARK SOL
FAN SPEED
COOLING FAN
WORK (A)
TRAVEL (A)
ATT RELIEF
ATT RELIEF EPPR
TRAVEL STRAIGHT
TRAVEL BZ
HIGH SPEED SOL (MO)
P1 REG
P2 REG EPPR
N1 PRESS
N2 PRESS
P2 PRESS
P1 PRESS
P3 PRESS
MAIN PUMP
ARM REGEN
POWER BOOST
SAFETY SOL
BOOM PRIOR. ITY
QUICK COUPLER
BOOM DOWN CUT-OFF
BOOM DOWN FLOATING
BOOM UP FLOATING
BOOM CYL ROD PS
OVER LOAD
SENSOR WATER LEVEL
TANK LEVEL SENSOR
DEF LAMP
DEF LINE HEATING
DEF LINE HEATER
SCR&DEF SUPPLY MODULE
RESISTOR
EXHAUST GAS TEMP SENSOR
OUTLET NOX
INLET NOX
DPF PRESS SENSOR
DEF DOSING MODULE
COOLANT VIV
WIF
SENSOR,PRS TEMP
Service Tool
AIR CLEANER SW
FUEL LEVEL
HYD TEMP
OPTION
SIREN SPEAKER
SIREN AMP
FUEL FILLER PUMP
CONTINUA CONNECTION
FLOAT SWITCH
AUTO GREASE
WASHER P/P
LOW WIPER MOTOR
AIR-CON
RADIO
HORN
WORK LAMP
HEAD LAMP RH
HEAD LAMP LH
HEAD LAMP REAR
FUEL HEATER
RDU, MEMBRANE CONT.
BATT RY CN-1
BATTERY
12V X 2
TO-STARTER
M. TERM
MASTER SW
P/TC POWER (EXCEPT KOR)
AIR COMP POWER
CIRCUIT BREAKER
60A
40A
CN-6A
CN-5
CN-249 REAR VIEW CAMERA
AAVM
PVG EXT. HARNESS
WASHER P/P
HEAD LAMP FRONT/REAR
CABIN LAMP, BEACON
SAFETY
WORK LAMP, FUEL HEATER
COMP.
HORN
TO HARNESS ENGINE
CAN 1
CAN 2
RH CONSOL
LH CONSOL
RH-03
RH-04
RH-05
RH-06
RH-07
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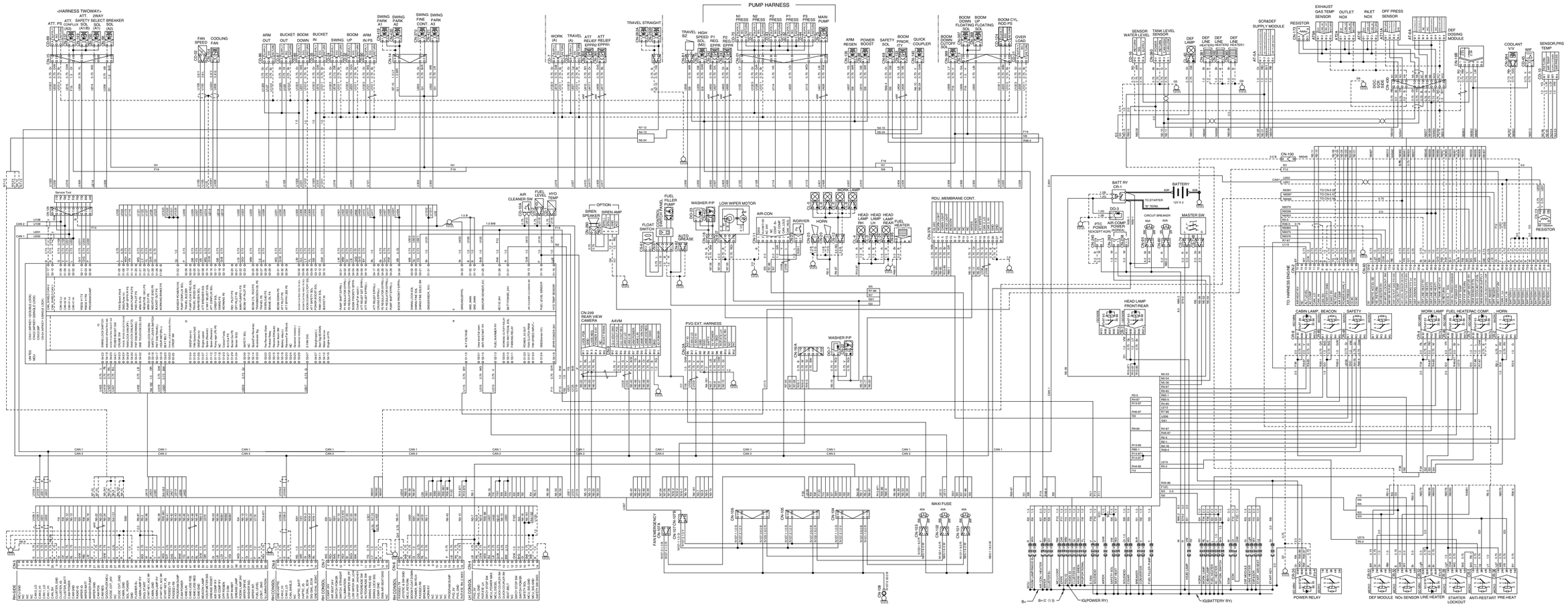
RH-40
RH-41
RH-42

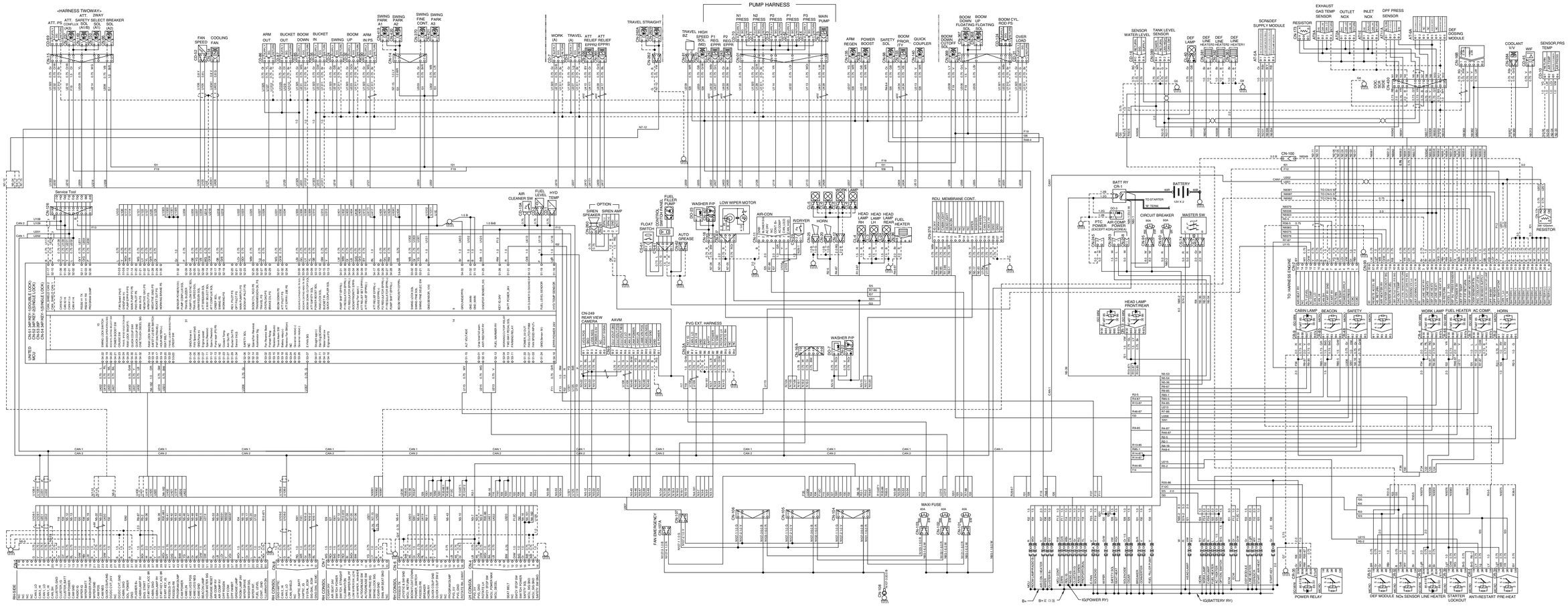
· ELECTRICAL CIRCUIT (1/3. OPTION)

- MACHINE SERIAL NO. : #0163-#0204



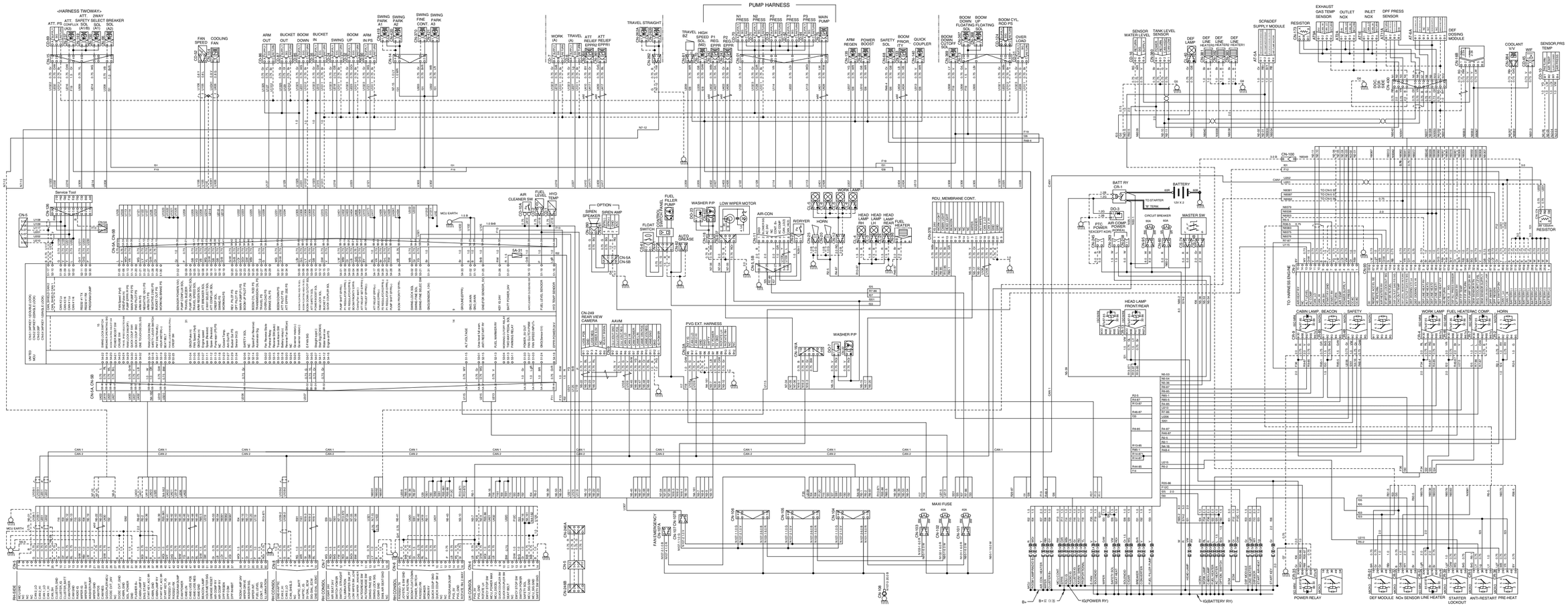
20KA-92210-00

- MACHINE SERIAL NO. : #0205-#0405



20KA-92211-00

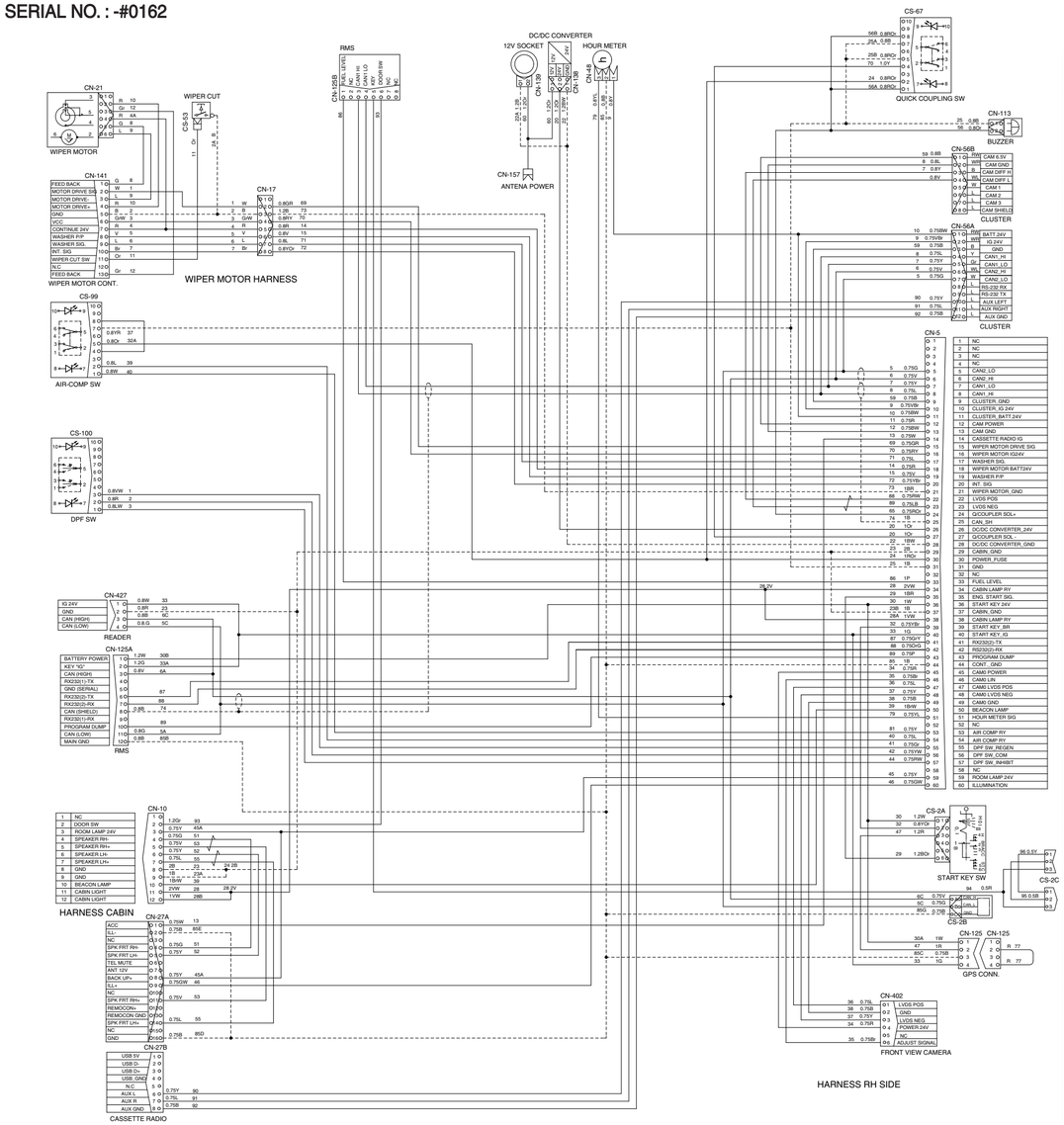
- MACHINE SERIAL NO. : #0406-

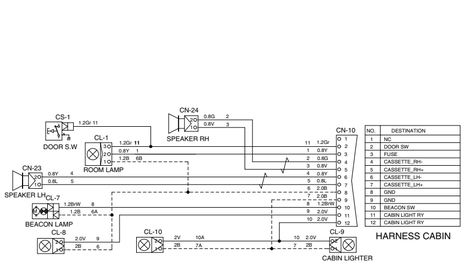


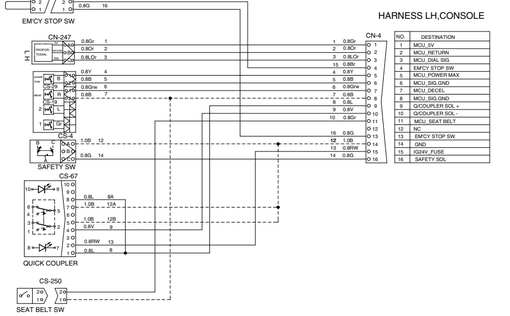
20KA-92212-00

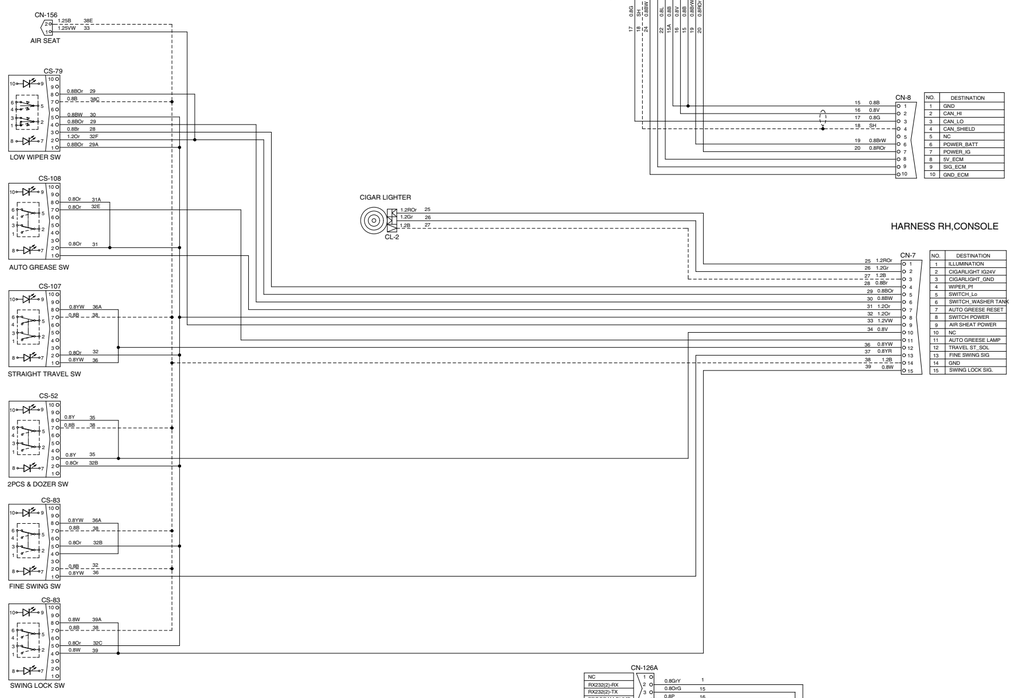
· ELECTRICAL CIRCUIT (2/3)

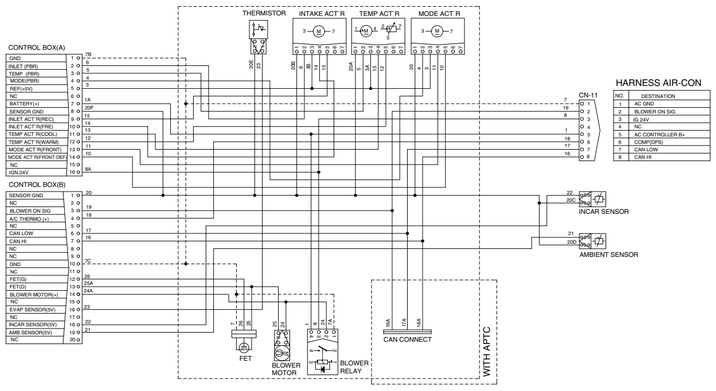
- MACHINE SERIAL NO. : -#0162

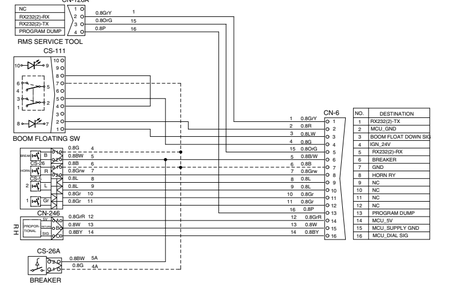






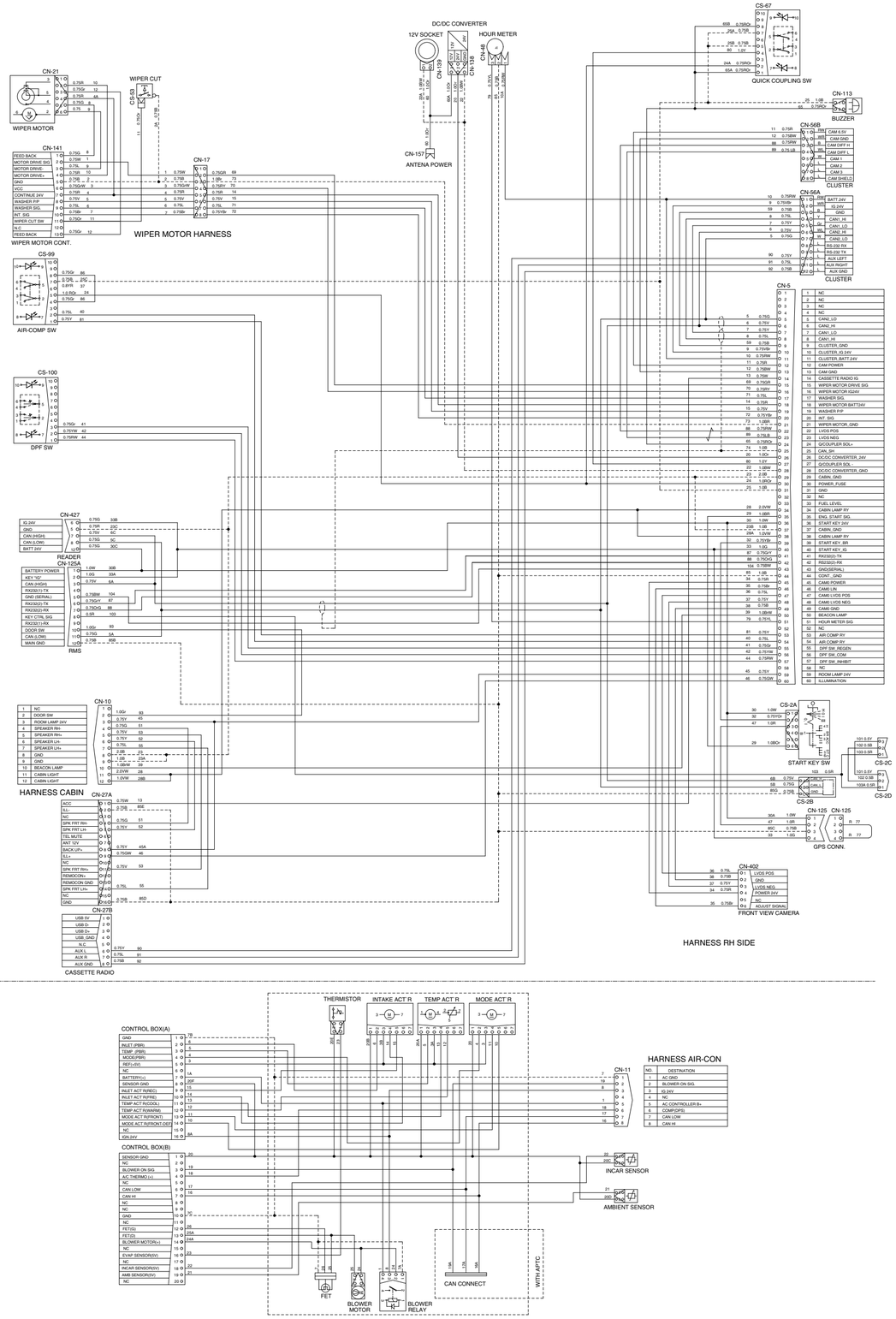


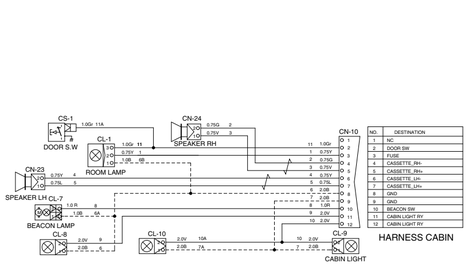




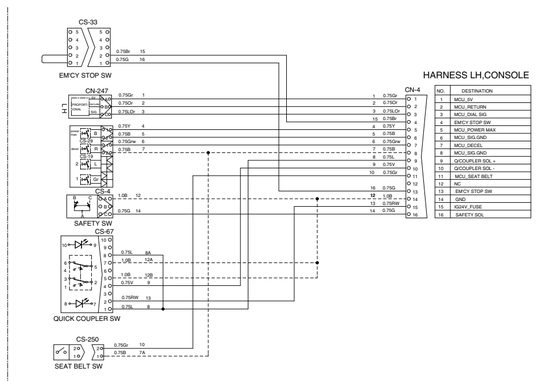
20K8-95100-02

- MACHINE SERIAL NO. : #0163-#0204

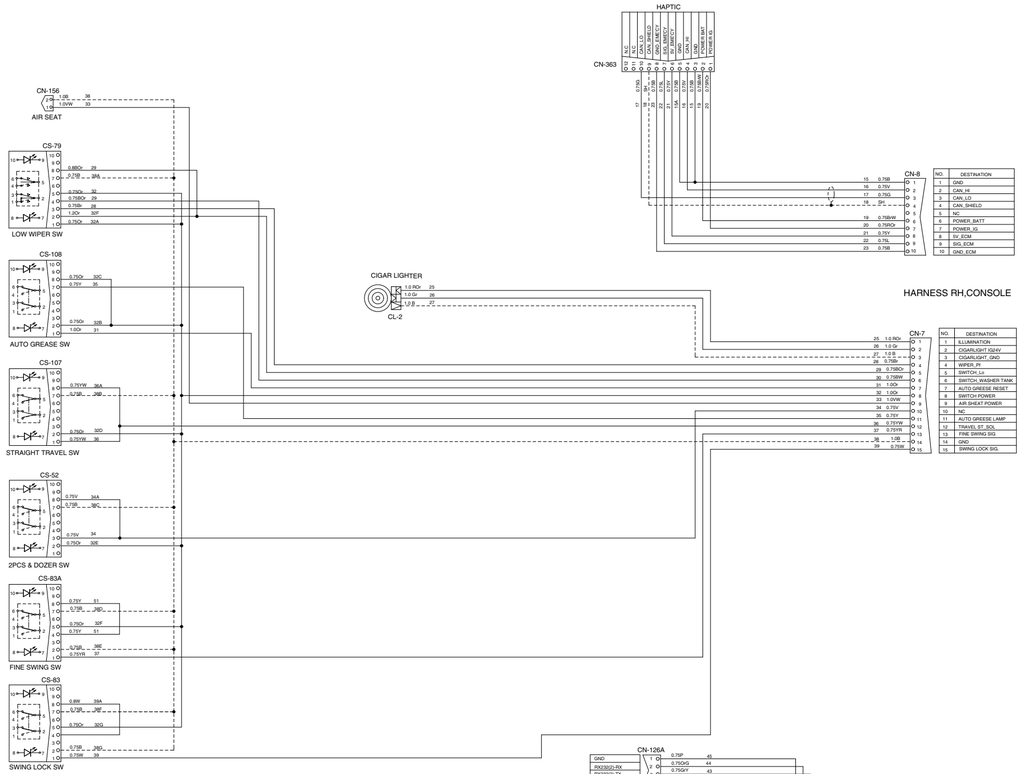




NO.	DESTINATION
1	NC
2	DOOR SW
3	FUSE
4	CASSETTE_RH+
5	CASSETTE_RH-
6	CASSETTE_LH-
7	CASSETTE_LH+
8	GND
9	GND
10	BEACON SW
11	CABIN LIGHT RY
12	CABIN LIGHT RY



NO.	DESTINATION
1	MCU_5V
2	MCU_RETURN
3	MCU_DIAL SIG
4	EMCY STOP SW
5	MCU_POWER MAX
6	MCU_SIG.GND
7	MCU_DECEL
8	MCU_SIG.GND
9	G/COUPLER SOL +
10	G/COUPLER SOL -
11	MCU_SEAT BELT
12	NC
13	EMCY STOP SW
14	GND
15	IGNIV_FUSE
16	SAFETY SOL



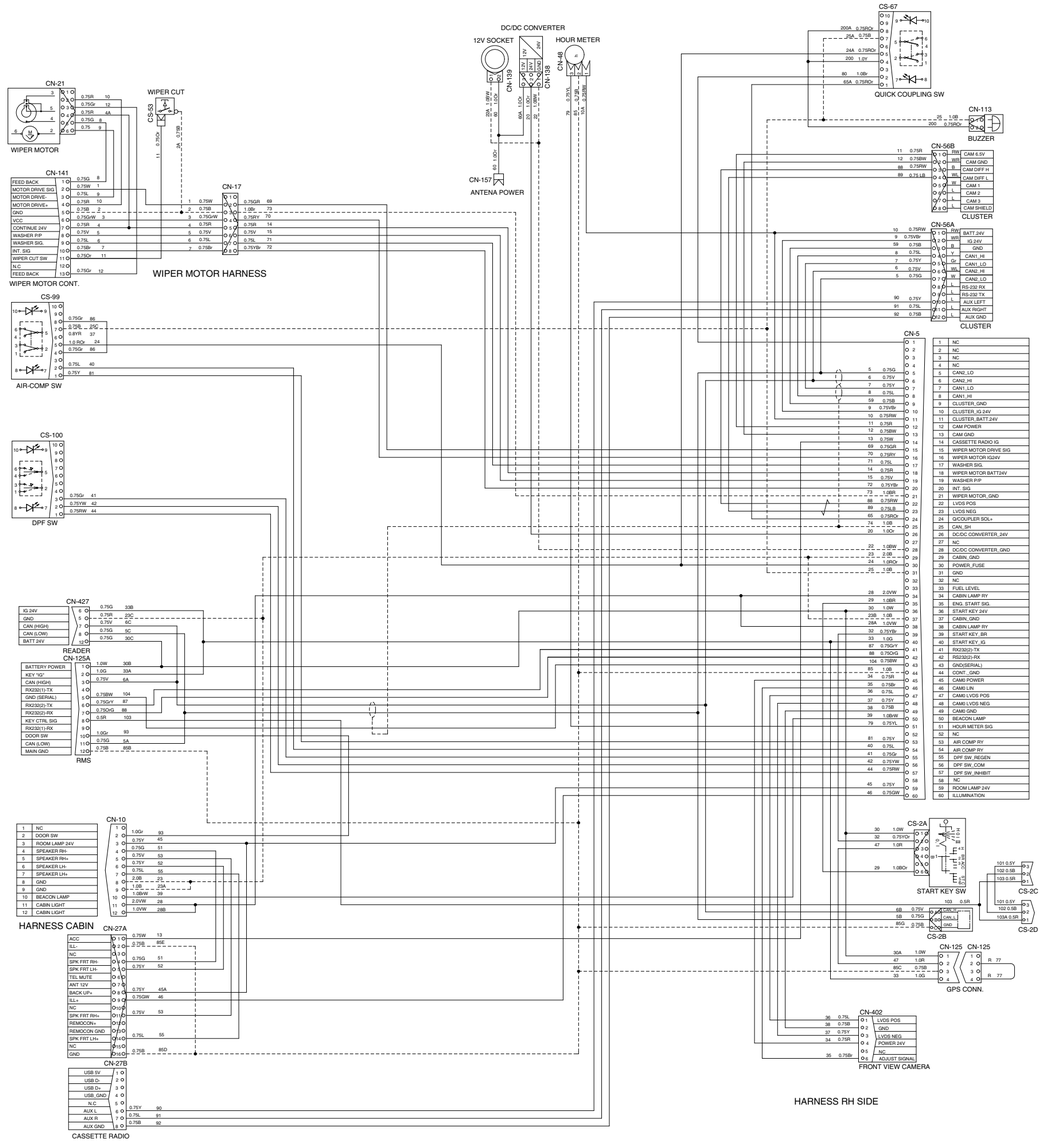
NO.	DESTINATION
1	GND
2	CAN_HI
3	CAN_LO
4	CAN_SHIELD
5	NC
6	POWER_BATT
7	POWER_IG
8	5V_ECM
9	SIG_ECM
10	GND_ECM

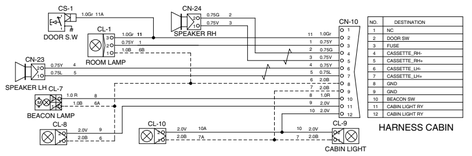
NO.	DESTINATION
1	ILLUMINATION
2	CIGARLIGHT IGI+V
3	CIGARLIGHT_GND
4	WIPER_R
5	SWITCH_Ls
6	SWITCH_WASHER TANK
7	AUTO GREESE RESET
8	SWITCH POWER
9	AIR SHEAT POWER
10	NC
11	AUTO GREESE LAMP
12	TRAVEL ST_SOL
13	FINE SWING SIG
14	GND
15	SWING LOCK SIG

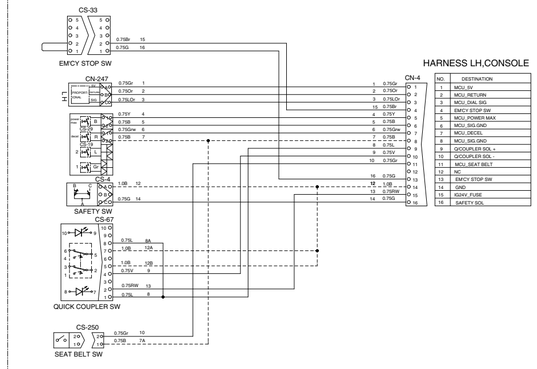
NO.	DESTINATION
1	AC GND
2	BLOWER ON SIG.
3	IG.24V
4	NC
5	AC CONTROLLER B+
6	COMP(DPS)
7	CAN LOW
8	CAN HI

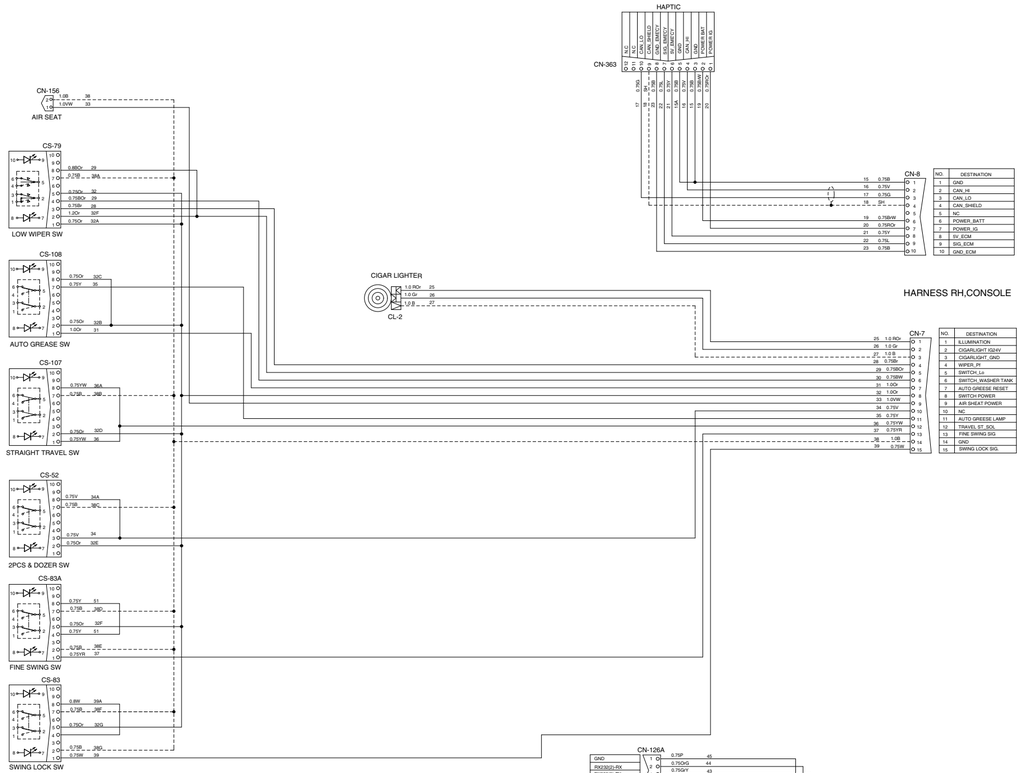
20K8-93110-00

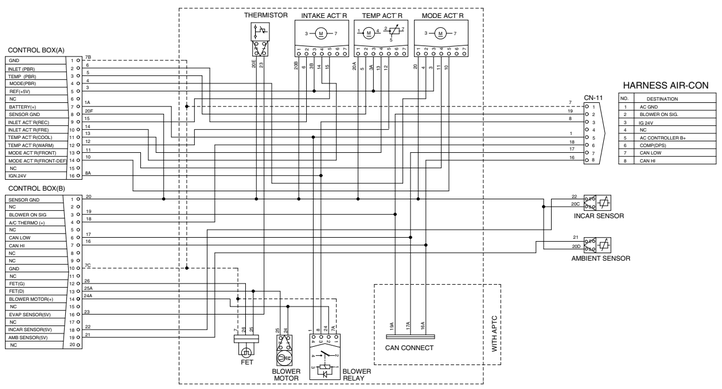
- MACHINE SERIAL NO. : #0205-

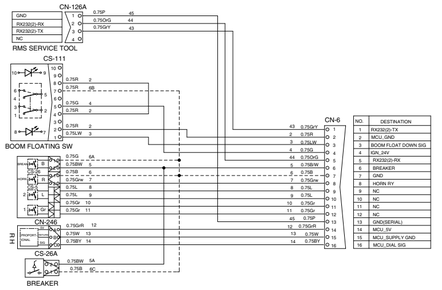








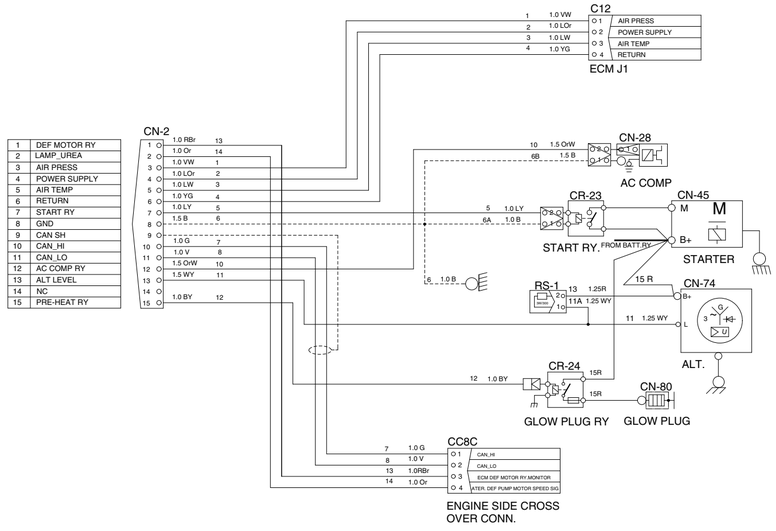




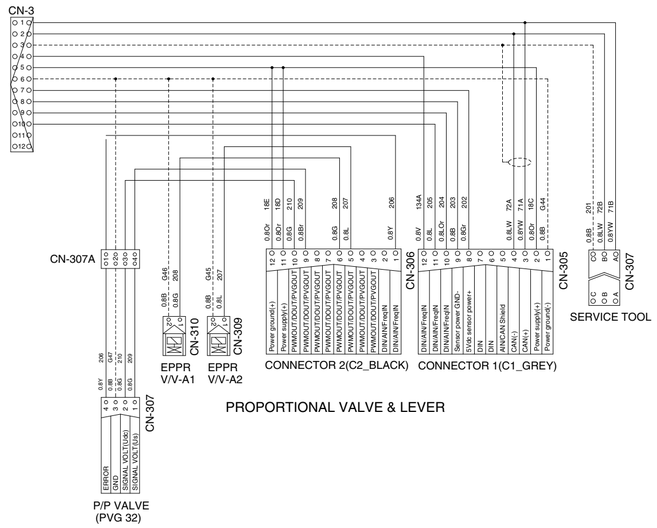
20K8-93111-00

· ELECTRICAL CIRCUIT (3/3)

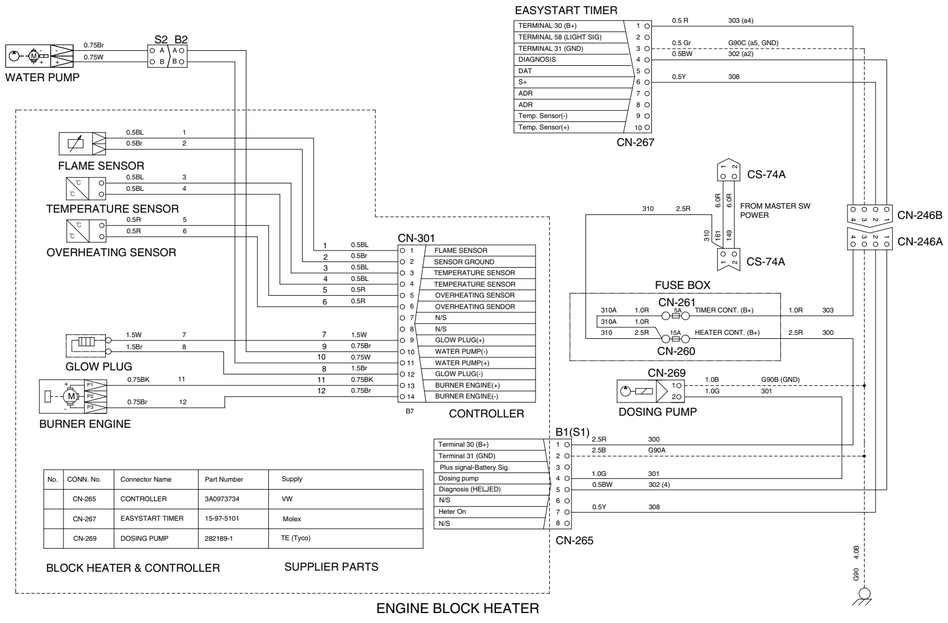
- MACHINE SERIAL NO. : -#0162



ENGINE HARNESS



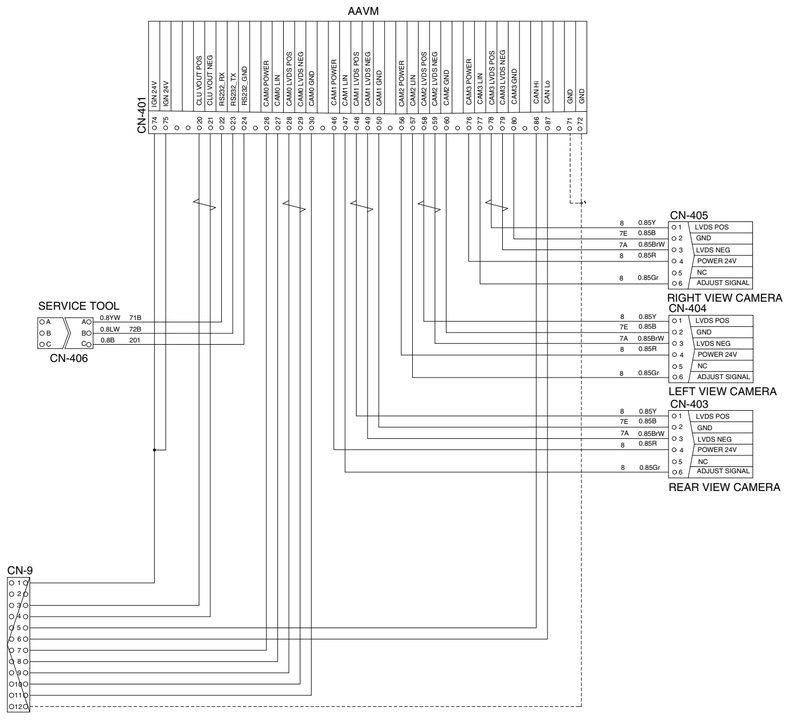
PREHEATER HARNESS (TIMER+WEB)



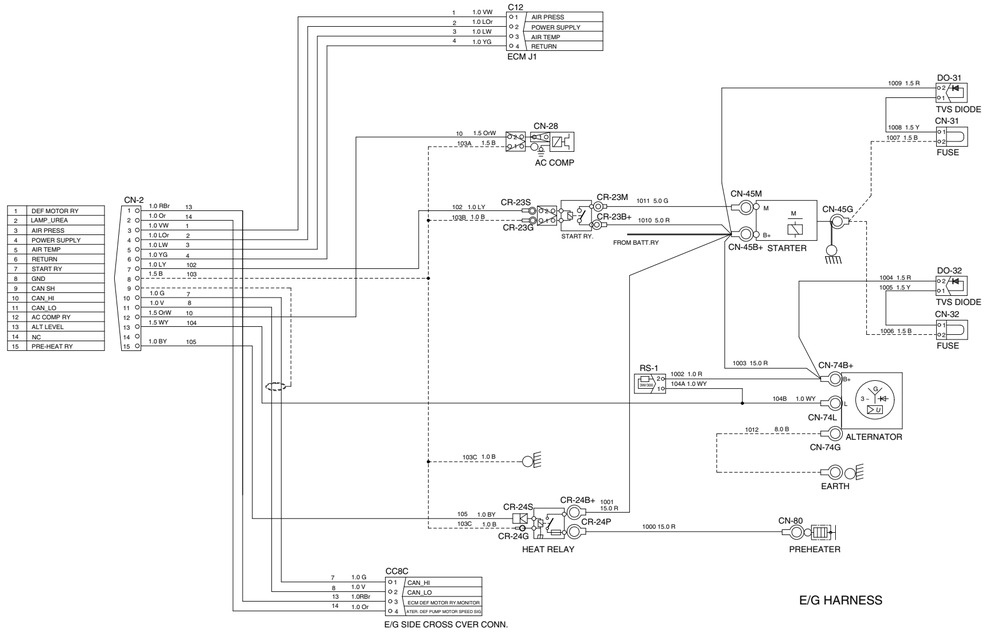
No.	CONN. No.	Connector Name	Part Number	Supply
	CN-265	CONTROLLER	3A0973734	VW
	CN-267	EASYSTART TIMER	15-97-5101	Molex
	CN-269	DOSING PUMP	282189-1	TE (Tyco)

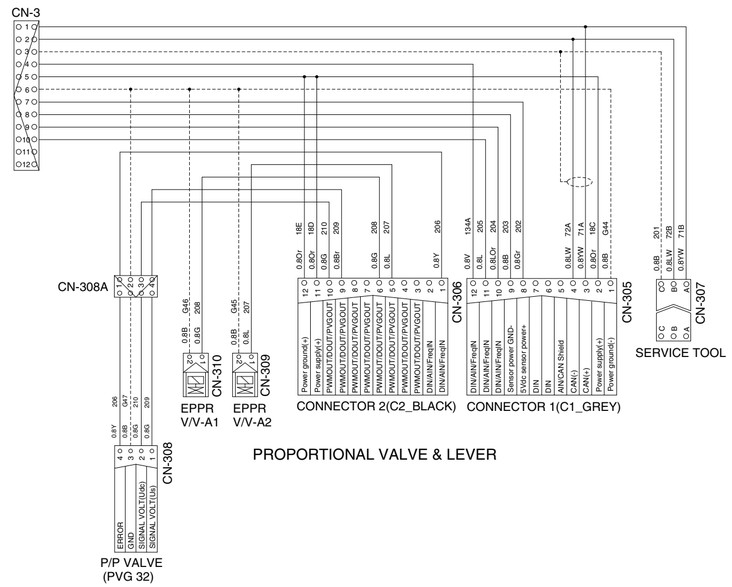
BLOCK HEATER & CONTROLLER SUPPLIER PARTS

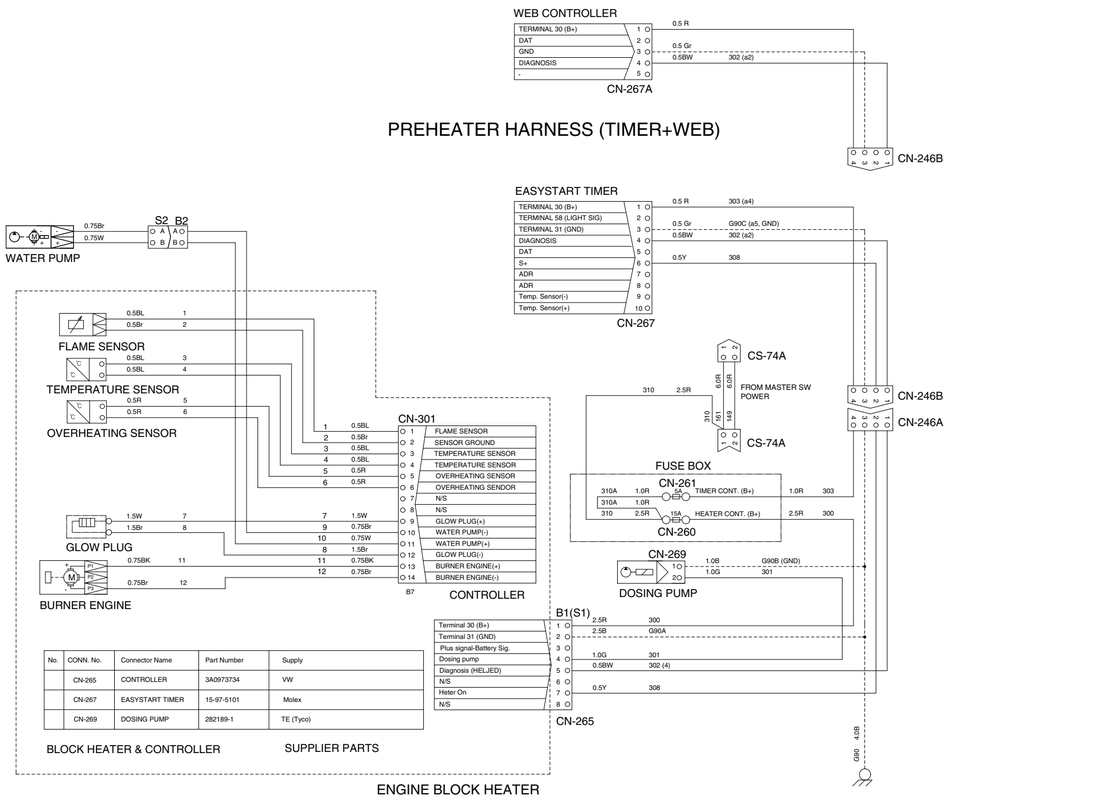
PREHEATER HARNESS (ONLY TIMER)

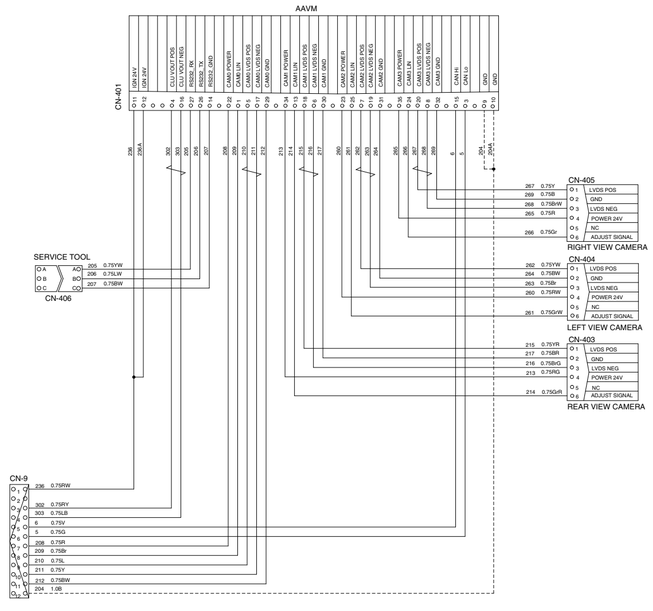


- MACHINE SERIAL NO. : #0163-



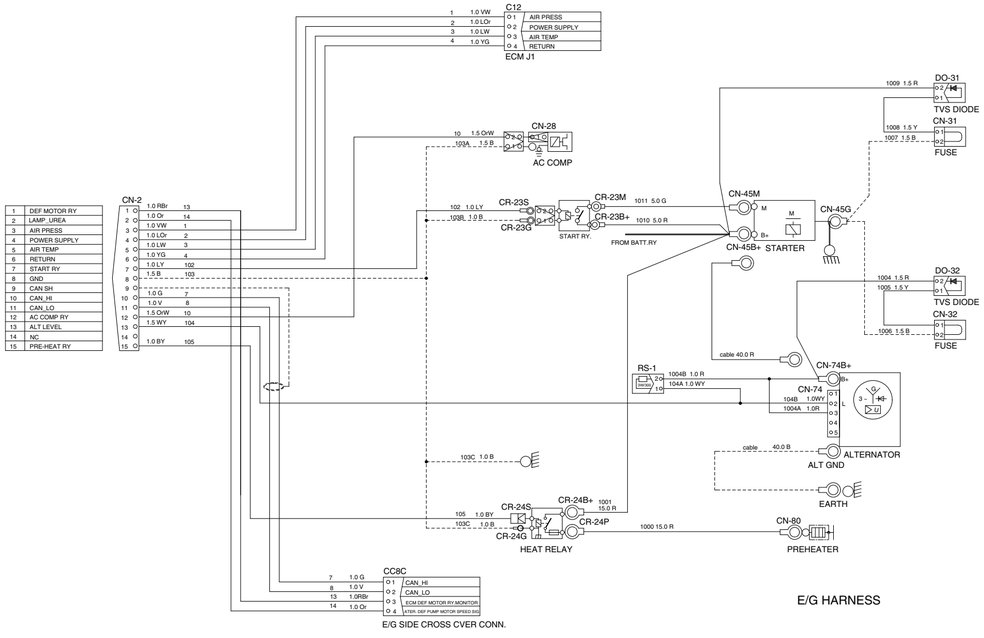






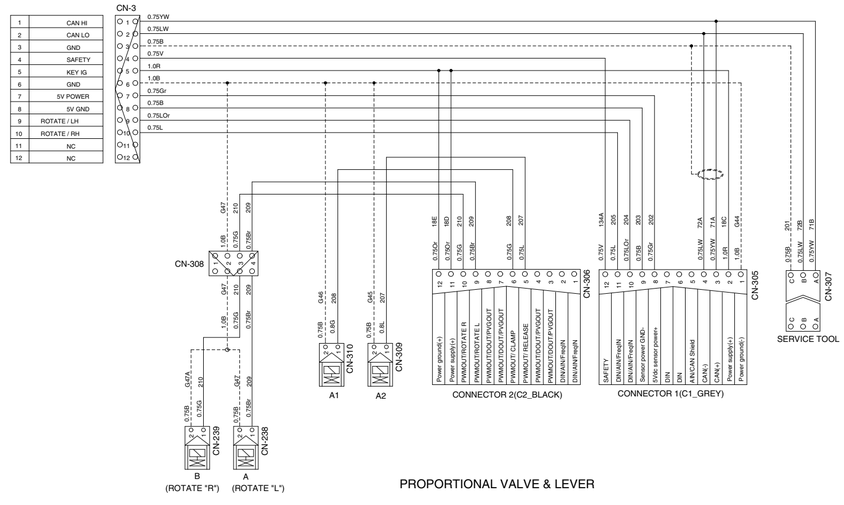
· ELECTRICAL CIRCUIT (3/3, OPTION)

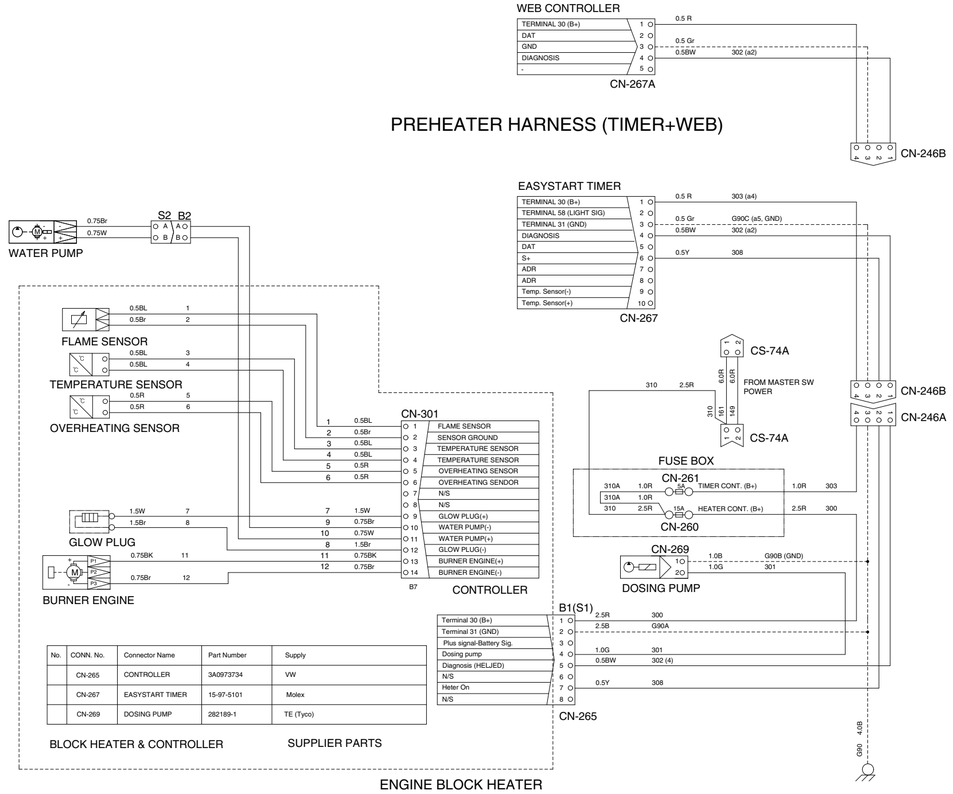
- MACHINE SERIAL NO. : #0154-



1	DEF MOTOR RY
2	LAMP_UREA
3	AIR PRESS
4	POWER SUPPLY
5	AIR TEMP
6	RETURN
7	START RY
8	GND
9	CAN SH
10	CAN_HI
11	CAN_LO
12	AC COMP RY
13	ALT LEVEL
14	NC
15	PRE-HEAT RY

1	CAN HI
2	CAN LO
3	GND
4	SAFETY
5	KEY IG
6	GND
7	5V POWER
8	5V GND
9	ROTATE / LH
10	ROTATE / RH
11	NC
12	NC





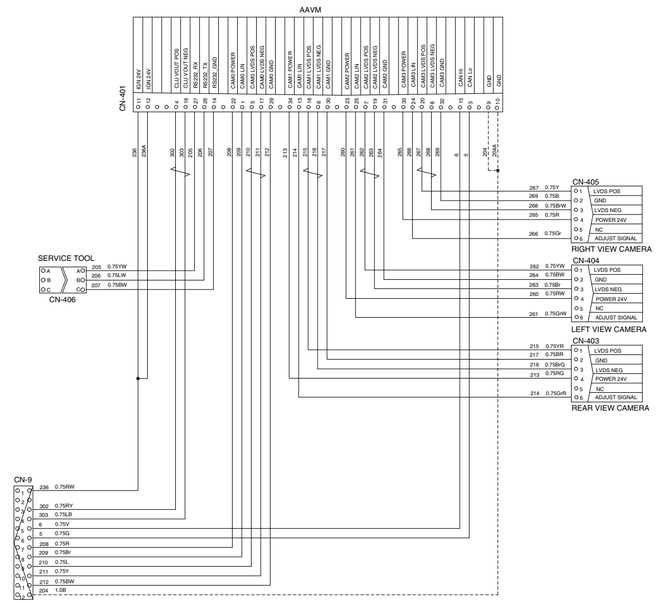
1	FLAME SENSOR
2	SENSOR GROUND
3	TEMPERATURE SENSOR
4	TEMPERATURE SENSOR
5	OVERHEATING SENSOR
6	OVERHEATING SENDOR
7	N/S
8	N/S
9	GLOW PLUG(+)
10	WATER PUMP(-)
11	WATER PUMP(+)
12	GLOW PLUG(-)
13	BURNER ENGINE(+)
14	BURNER ENGINE(-)

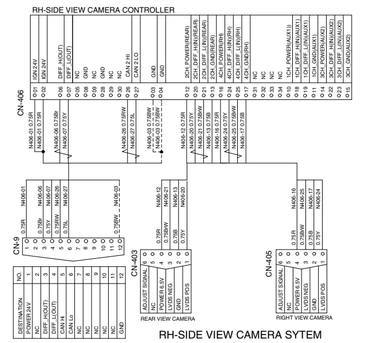
Terminal 30 (B+)	
Terminal 31 (GND)	
Plus signal-Battery Sig.	
Dosing pump	
Diagnosis (HELJED)	
N/S	
Heter On	
N/S	

No.	CONN. No.	Connector Name	Part Number	Supply
	CN-265	CONTROLLER	3A0973734	VW
	CN-267	EASYSTART TIMER	15-97-5101	Molex
	CN-269	DOSING PUMP	282189-1	TE (Tyco)

PREHEATER HARNESS (TIMER+WEB)

PREHEATER HARNESS (ONLY TIMER)





20KA-95311-00

MEMORANDUM

1. POWER CIRCUIT (MACHINE SERIAL NO. : -#0162)

The negative terminal of battery is grounded to the machine chassis directly.

When the start switch is in the OFF position, the current flows from the positive battery terminal as shown below.

1) OPERATING FLOW

Battery → Battery relay [CR-1] → Circuit breaker [CN-60] → Master switch [CS-74]

- → Fuse box [No.1] → Engine ECM [CN-93 (1, 25, 26, 27, 28)]
- → Fuse box [No.2] → United MCU [CN-51 (01)]
- → Fuse box [No.3]
  - → DEF module relay [CR-51 (3)]
  - → Urea purging lamp [CL-40 (1)]
- → Fuse box [No.4] → I/conn [CN-5 (59)]
  - → I/conn [CN-10 (3)] → Room lamp [CL-1 (2)]
    - → Door switch [CS-1]
    - → I/conn [CN-10 (2)] → RMS [CN-125B (6)]
  - → Radio & USB player [CN-27A (8)]
- → Fuse box [No.5] → Line heater relay [CR-52 (30, 86)]
- → Fuse box [No.6]
  - → Master switch [CS-74B] → I/conn [CN-5 (36)]
    - → Start switch [CS-2A (1)]
    - → RMS [CN-125A (1)]
    - → GPS connection [CN-125 (1)]
  - → Power relay [CR-35 (30)]
- → Fuse box [No.7] → I/conn [CN-11 (5)]
  - → AC & Heater controller box A (7)
  - → Blower relay (4)
- → Fuse box [No.8] → I/conn [CN-5 (18)] → I/conn [CN-17 (5)]
  - → Wiper motor controller [CN-141 (7)]
  - → Wiper motor [CN-21 (4)]
- → Fuse box [No.9]
  - → I/conn [CN-5 (11)]
    - → Cluster [CN -56A (1)]
    - → Hour meter [CN-48 (1)]
  - → I/conn [CN-8 (6)] → Jog dial module [CN-363 (2)]
- → Fuse box [No.10] → NOx sensor relay [CR-50 (3)]
- → Fuse box [No.11] → United MCU [CN-54 (18)]

※ I/conn : Intermediate connector

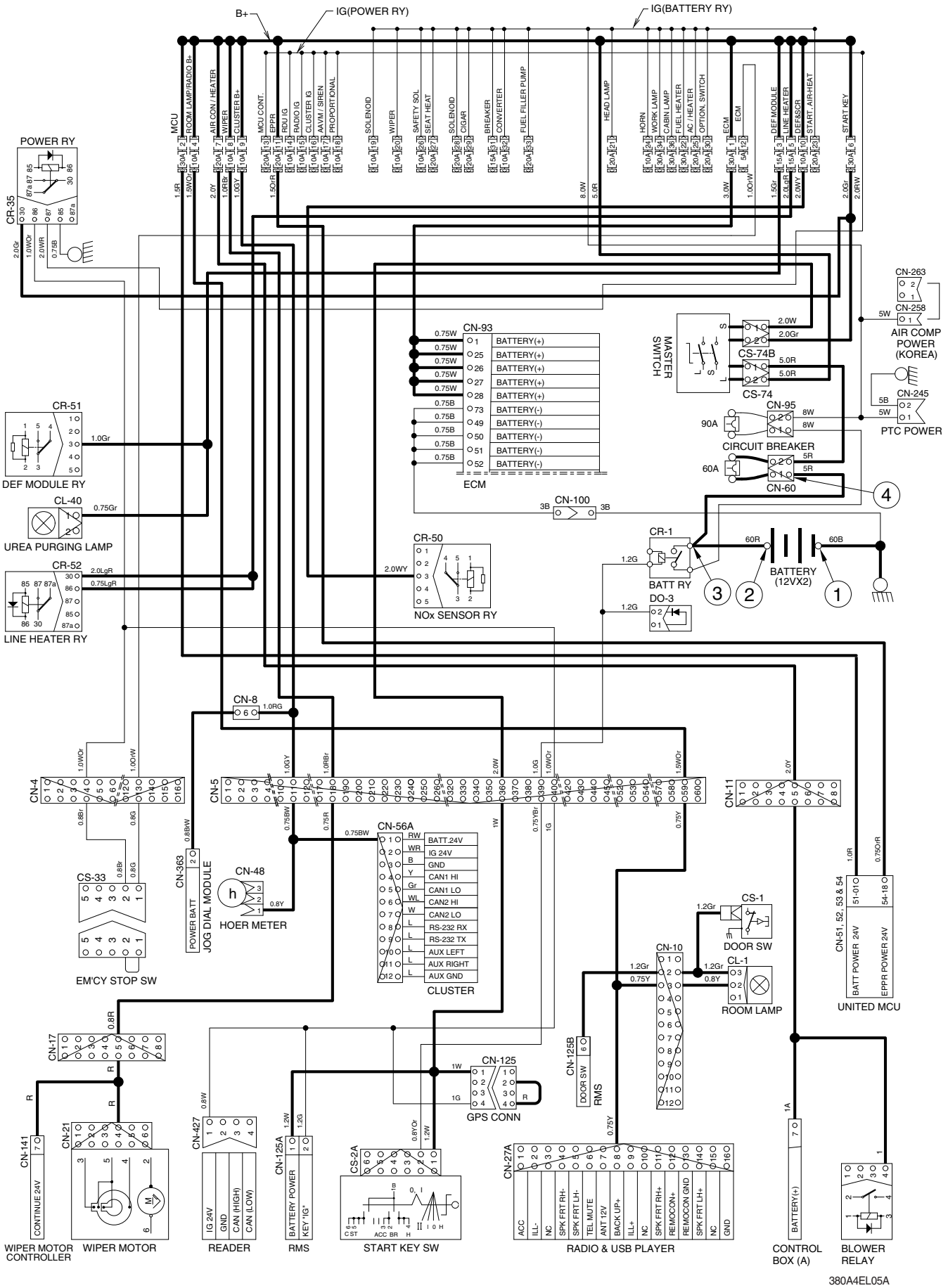
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	OFF	① - GND (battery 1EA)	10~12.5V
		② - GND (battery 2EA)	20~25V
		③ - GND (battery relay)	20~25V
		④ - GND (circuit breaker)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

POWER CIRCUIT (MACHINE SERIAL NO. : -#0162)



※ The circuit diagram may differ from the equipment, so please check before a repair.

POWER CIRCUIT (MACHINE SERIAL NO. : #0163-)

The negative terminal of battery is grounded to the machine chassis directly.
When the start switch is in the OFF position, the current flows from the positive battery terminal as shown below.

1) OPERATING FLOW

Battery → Battery relay [CR-1] → Circuit breaker [CN-60] → Master switch [CS-74]

- → Fuse box [No.1] → Engine ECM [CN-93 (1, 25, 26, 27, 28)]
- → Fuse box [No.2] → United MCU [CN-51 (01)]
- → Fuse box [No.3]
  - → DEF module relay [CR-51 (3)]
  - → Urea purging lamp [CL-40 (1)]
- → Fuse box [No.4] → I/conn [CN-5 (59)]
  - → I/conn [CN-10 (3)] → Room lamp [CL-1 (2)]
    - → Door switch [CS-1]
    - → I/conn [CN-10 (2)] → RMS [CN-125A (10)]
  - → Radio & USB player [CN-27A (8)]
- → Fuse box [No.5] → Line heater relay [CR-52 (30, 86)
- → Fuse box [No.6]
  - → Master switch [CS-74B] → I/conn [CN-5 (36)]
    - → Start switch [CS-2A(1)]
    - → RMS [CN-125A (1)]
    - → GPS connection [CN-125 (1)]
    - → Reader [CN-427 (12)]
  - → Power relay [CR-35 (30)]
- → Fuse box [No.7] → I/conn [CN-11 (5)]
  - → AC & Heater controller box A (7)
  - → Blower relay (4)
- → Fuse box [No.8] → I/conn [CN-5 (18)] → I/conn [CN-17 (5)]
  - → Wiper motor controller [CN-141 (7)]
  - → Wiper motor [CN-21 (4)]
- → Fuse box [No.9]
  - → I/conn [CN-5 (11)]
    - → Cluster [CN -56A (1)]
    - → Hour meter [CN-48 (1)]
  - → I/conn [CN-8 (6)] → Jog dial module [CN-363 (2)]
- → Fuse box [No.10] → NOx sensor relay [CR-50 (3)]
- → Fuse box [No.11] → United MCU [CN-54 (18)]

※ I/conn : Intermediate connector

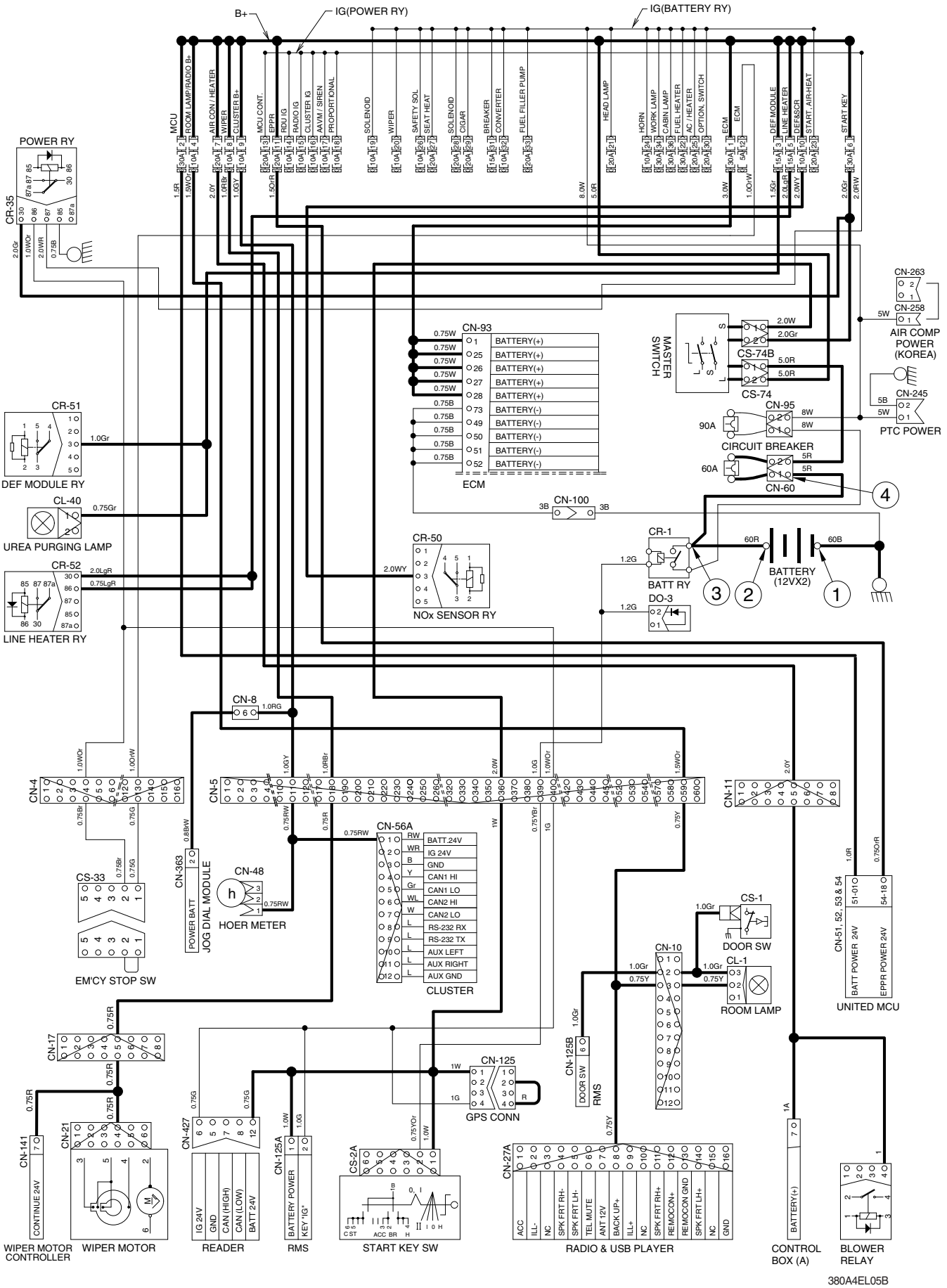
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	OFF	① - GND (battery 1EA)	10~12.5V
		② - GND (battery 2EA)	20~25V
		③ - GND (battery relay)	20~25V
		④ - GND (circuit breaker)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

POWER CIRCUIT (MACHINE SERIAL NO. : #0163-)



※ The circuit diagram may differ from the equipment, so please check before a repair.

2. STARTING CIRCUIT (MACHINE SERIAL NO. : -#0003)

1) OPERATING FLOW

Battery (+) terminal → Battery relay [CR-1] → Circuit breaker [CN-60] → Master switch [CS-74]
→ Fuse box [No.6] → Master switch [CS-74B] → I/conn [CN-5 (36)] → Start switch [CS-2A (1)]
→ Power relay [CR-35 (30)]

(1) When start key switch is in ON position

→ Start switch ON [CS-2A (2)] → I/conn [CN-5 (39)]
→ Battery relay [CR-1] → Battery relay operating (all power is supplied with the electric component)
→ Start switch ON [CS-2A (3)] → GPS conn [CN-125 (2) → (4)
→ I/conn [CN-5 (40)] → Power relay [CR-35 (86) → (87)]
→ Fuse box [IG (power relay)]
→ I/conn [CN-4 (4)]
→ Emergency engine stop sw [CS-33 (2)→(1)]
→ I/conn [CN-4 (13)] → Fuse box [No. 12]
→ Engine ECM [CN-93 (5)]
→ Reader [CN-427 (1)]
→ RMS [CN-125A (2)]

When start key switch is in START position

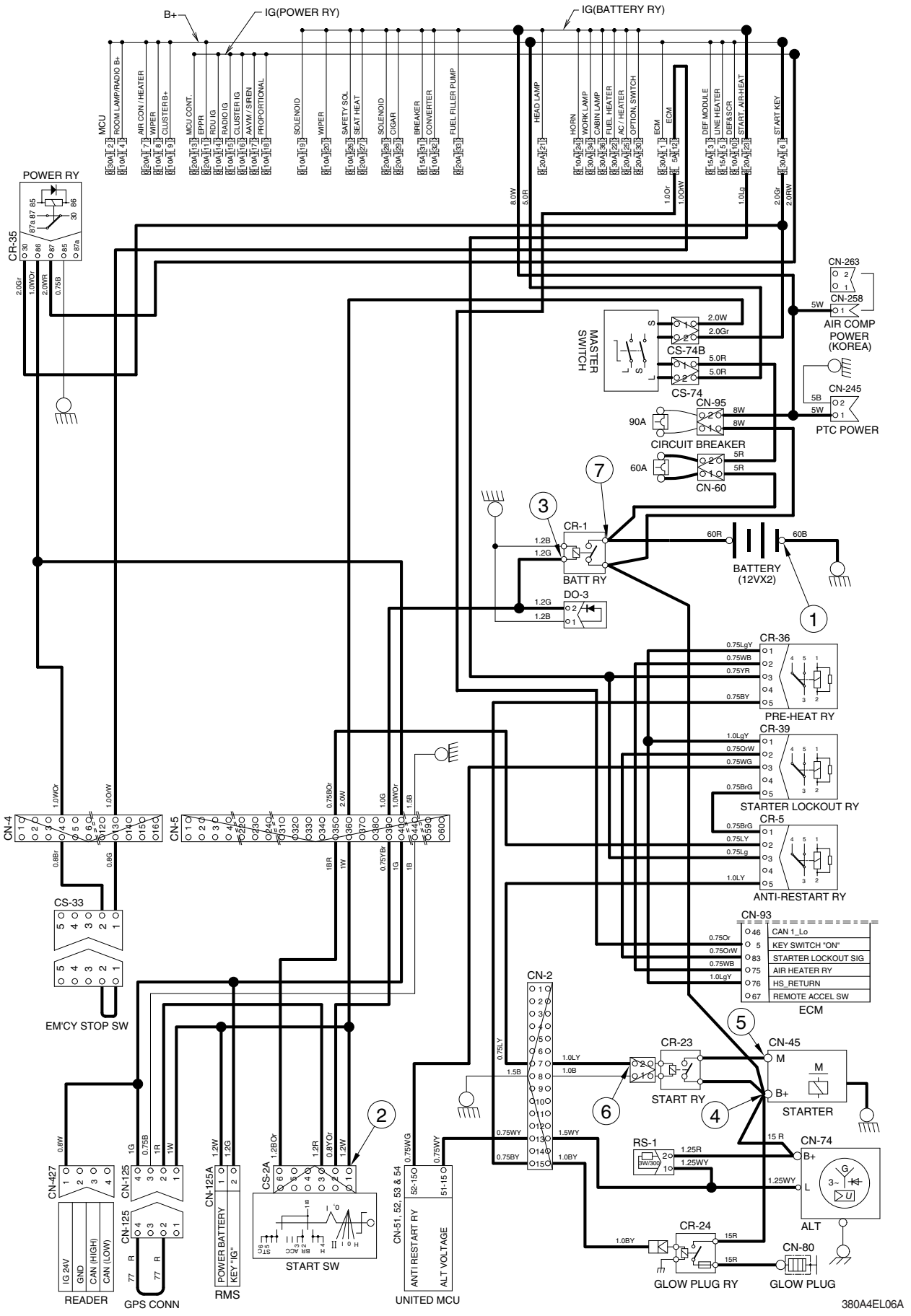
(2) Start switch START [CS-2A (6)] → I/conn [CN-5 (35)] → Anti-restart relay [CR-5 (2) → (5)]
→ I/conn [CN-2 (7)] → Start relay [CR-23 (2)] → Starter motor operating

2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	START	① - GND (battery) ② - GND (start switch) ③ - GND (battery relay M4) ④ - GND (starter B^+) ⑤ - GND (starter M) ⑥ - GND (start relay) ⑦ - GND (battery relay M8)	20~25V

※ The circuit diagram may differ from the equipment, so please check before a repair.

STARTING CIRCUIT (MACHINE SERIAL NO. : -#0003)



※ The circuit diagram may differ from the equipment, so please check before a repair.

STARTING CIRCUIT (MACHINE SERIAL NO. : #0004-#0162)

1) OPERATING FLOW

Battery (+) terminal → Battery relay [CR-1] → Circuit breaker [CN-60] → Master switch [CS-74]
→ Fuse box [No.6] → Master switch [CS-74B] → I/conn [CN-5 (36)] → Start switch [CS-2A (1)]
→ Power relay [CR-35 (30)]

(1) When start key switch is in ON position

- Start switch ON [CS-2A (2)] → I/conn [CN-5 (39)]
  → Battery relay [CR-1] → Battery relay operating (all power is supplied with the electric component)
- Start switch ON [CS-2A (3)] → GPS conn [CN-125 (2) → (4)
- I/conn [CN-5 (40)] → Power relay [CR-35 (86) → (87)]
  → Fuse box [IG (power relay)]
  → I/conn [CN-4 (4)]
  → Emergency engine stop sw [CS-33 (2)→(1)]
  → I/conn [CN-4 (13)] → Fuse box [No. 12]
  → Engine ECM [CN-93 (5)]
- Reader [CN-427 (1)]
- RMS [CN-125A (2)]

When start key switch is in START position

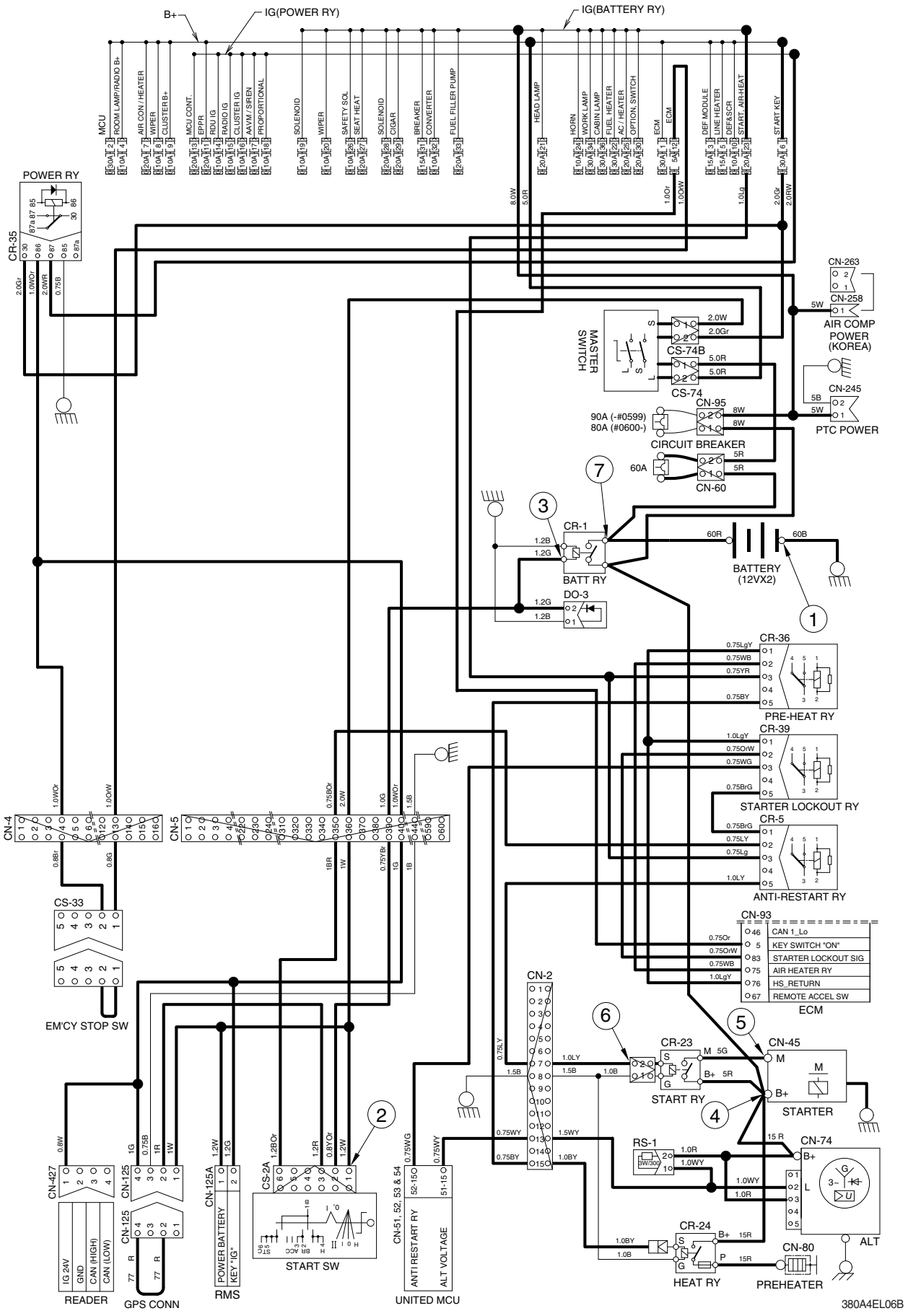
(2) Start switch START [CS-2A (6)] → I/conn [CN-5 (35)] → Anti-restart relay [CR-5 (2) → (5)]
→ I/conn [CN-2 (7)] → Start relay [CR-23 (2)] → Starter motor operating

2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	START	① - GND (battery) ② - GND (start switch) ③ - GND (battery relay M4) ④ - GND (starter B^+) ⑤ - GND (starter M) ⑥ - GND (start relay) ⑦ - GND (battery relay M8)	20~25V

※ The circuit diagram may differ from the equipment, so please check before a repair.

STARTING CIRCUIT (MACHINE SERIAL NO. : #0004-#0162)



※ The circuit diagram may differ from the equipment, so please check before a repair.

STARTING CIRCUIT (MACHINE SERIAL NO. : #0163-)

1) OPERATING FLOW

Battery (+) terminal → Battery relay [CR-1] → Circuit breaker [CN-60] → Master switch [CS-74]
→ Fuse box [No.6] → Master switch [CS-74B] → I/conn [CN-5 (36)] → Start switch [CS-2A (1)]
→ Power relay [CR-35 (30)]

(1) When start key switch is in ON position

- Start switch ON [CS-2A (2)] → I/conn [CN-5 (39)]
  → Battery relay [CR-1] → Battery relay operating (all power is supplied with the electric component)
- Start switch ON [CS-2A (3)] → GPS conn [CN-125 (2) → (4)
- I/conn [CN-5 (40)] → Power relay [CR-35 (86) → (87)]
  → Fuse box [IG (power relay)]
  → I/conn [CN-4 (4)]
  → Emergency engine stop sw [CS-33 (2)→(1)]
  → I/conn [CN-4 (13)] → Fuse box [No. 12]
  → Engine ECM [CN-93 (5)]
- Reader [CN-427 (6)]
- RMS [CN-125A (2)]

When start key switch is in START position

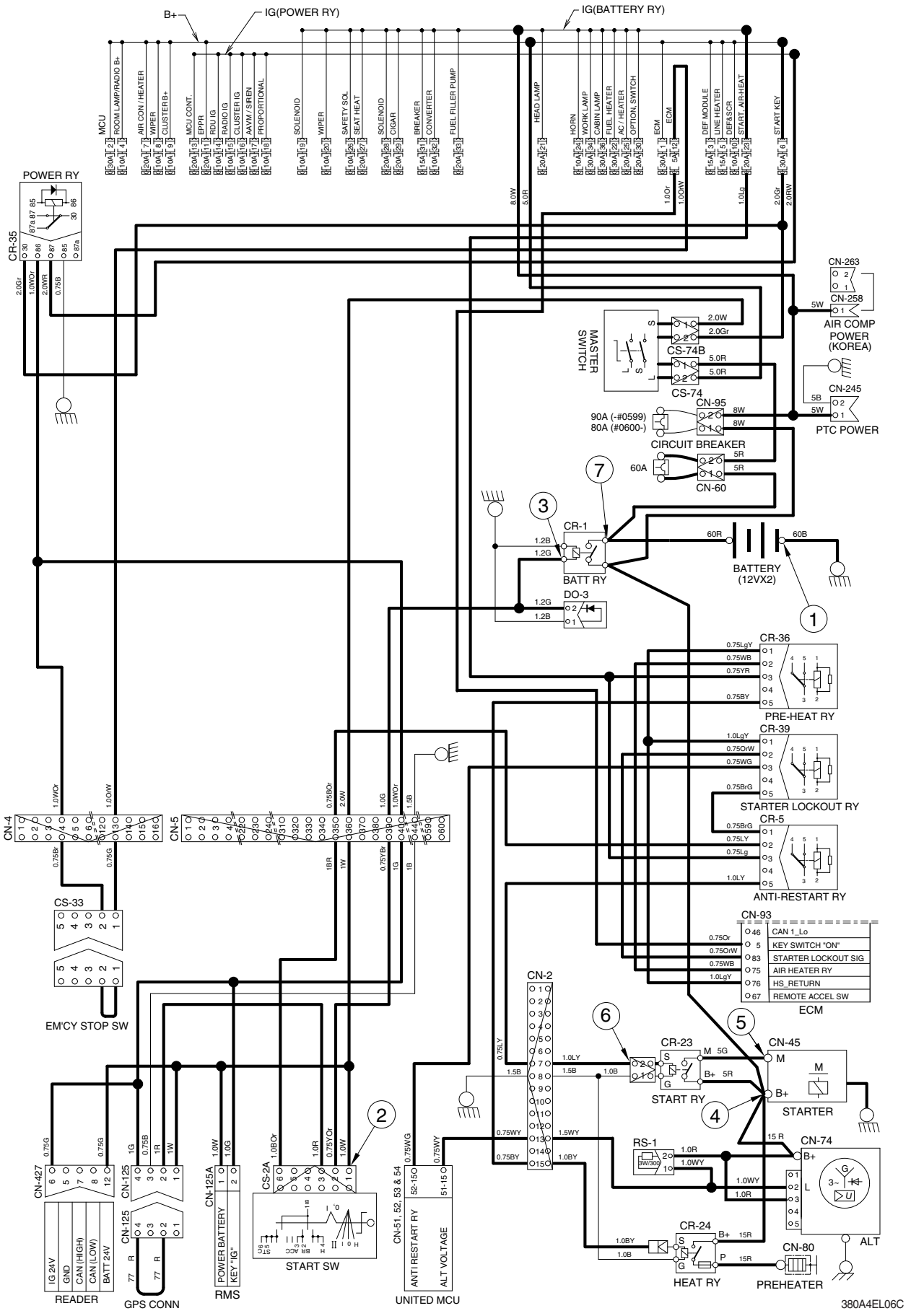
(2) Start switch START [CS-2A (6)] → I/conn [CN-5 (35)] → Anti-restart relay [CR-5 (2) → (5)]
→ I/conn [CN-2 (7)] → Start relay [CR-23 (2)] → Starter motor operating

2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	START	① - GND (battery) ② - GND (start switch) ③ - GND (battery relay M4) ④ - GND (starter B^+) ⑤ - GND (starter M) ⑥ - GND (start relay) ⑦ - GND (battery relay M8)	20~25V

※ The circuit diagram may differ from the equipment, so please check before a repair.

STARTING CIRCUIT (MACHINE SERIAL NO. : #0163-)



※ The circuit diagram may differ from the equipment, so please check before a repair.

3. CHARGING CIRCUIT (MACHINE SERIAL NO. : -#0003)

When the starter is activated and the engine is started, the operator releases the start switch to the ON position.

Charging current generated by operating alternator flows into the battery through the battery relay [CR-1].

The current also flows from alternator to each electrical component and controller through the fuse box.

1) OPERATING FLOW

(1) Warning flow

Alternator "L" terminal → I/conn [CN-2 (13)] → United MCU alternator voltage [CN-51 (15)] → Cluster charging warning lamp (Via CAN interface)

(2) Charging flow

Alternator "B^+" terminal → Starter [CN-45 (B^+)] → Battery relay (CR-1)

- → Battery (+) terminal
- → Circuit breaker [CN-60] → Master switch [CS-74] → Fuse box [B^+]
- → Circuit breaker [CN-95] → Fuse box [IG, battery] → Power relay [CR-35 (30)→(87)]
  - → Fuse box [IG, power]
  - → PTC power [CN-245 (1)]
  - → Air comp power [CN-258 (1)]

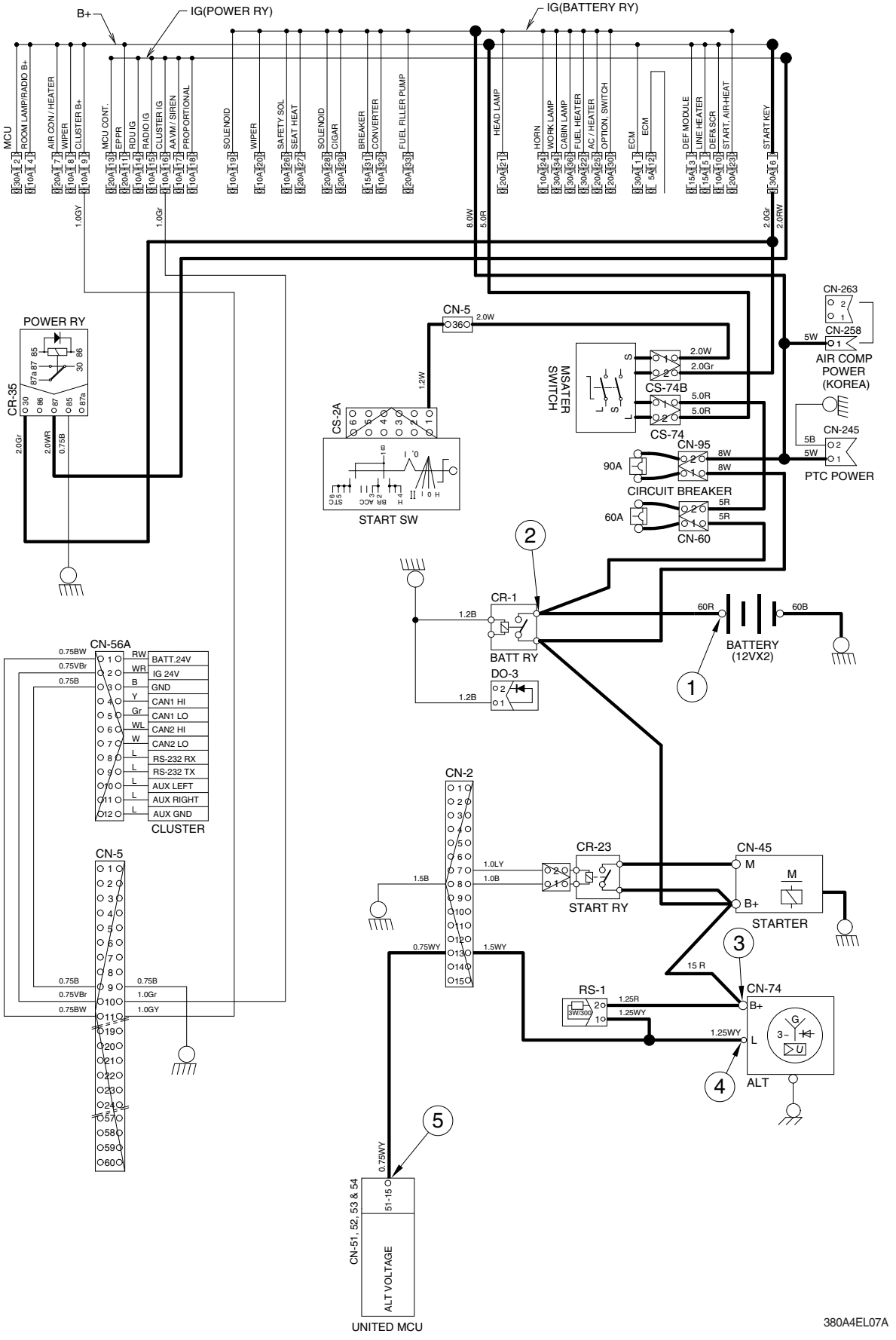
2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	ON	① - GND (battery voltage) ② - GND (battery relay) ③ - GND (alternator B^+ terminal) ④ - GND (alternator L terminal) ⑤ - GND (United MCU)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

CHARGING CIRCUIT (MACHINE SERIAL NO. : -#0003)



※ The circuit diagram may differ from the equipment, so please check before a repair.

CHARGING CIRCUIT (MACHINE SERIAL NO. : #0004-)

When the starter is activated and the engine is started, the operator releases the start switch to the ON position.

Charging current generated by operating alternator flows into the battery through the battery relay [CR-1].

The current also flows from alternator to each electrical component and controller through the fuse box.

1) OPERATING FLOW

(1) Warning flow

Alternator terminal [CN-74 (2)] → I/conn [CN-2 (13)]
→ United MCU alternator voltage [CN-51 (15)]
→ Cluster charging warning lamp (Via CAN interface)

(2) Charging flow

Alternator "B^+" terminal → Starter [CN-45 (B^+)] → Battery relay (CR-1)
→ Battery (+) terminal
→ Circuit breaker [CN-60] → Master switch [CS-74] → Fuse box [B^+]
→ Circuit breaker [CN-95] → Fuse box [IG, battery] → Power relay [CR-35 (30)→(87)]
→ Fuse box [IG, power]
→ PTC power [CN-245 (1)]
→ Air comp power [CN-258 (1)]

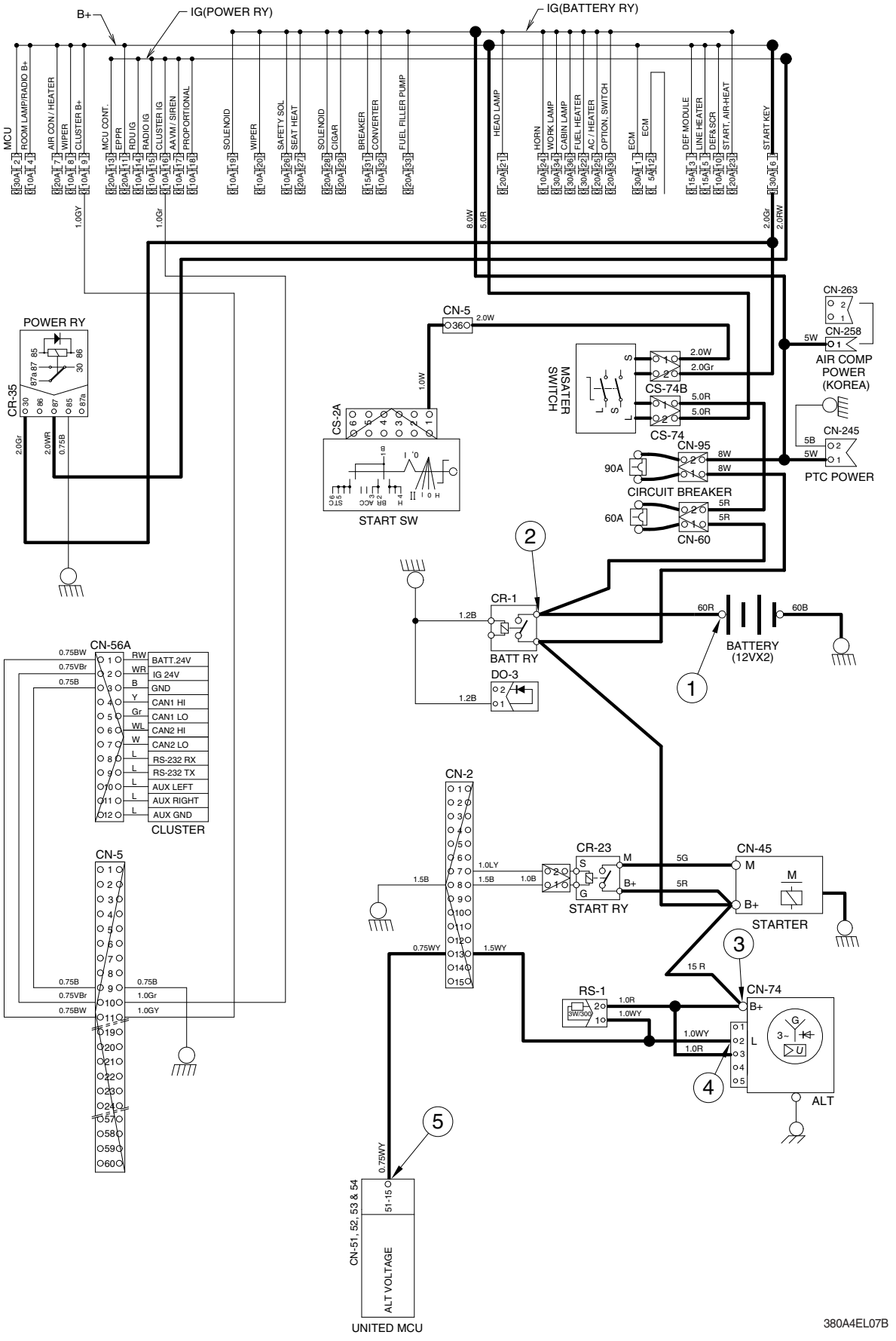
2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	ON	① - GND (battery voltage) ② - GND (battery relay) ③ - GND (alternator B^+ terminal) ④ - GND (alternator 2 terminal) ⑤ - GND (United MCU)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

CHARGING CIRCUIT (MACHINE SERIAL NO. : #0004-)



※ The circuit diagram may differ from the equipment, so please check before a repair.

4. HEAD AND WORK LIGHT CIRCUIT (MACHINE SERIAL NO. : -#0162)

1) OPERATING FLOW

Fuse box (No.21) → Head light relay [CR-13 (30, 86)]
Fuse box (No.34) → Work light relay [CR-4 (30, 86)]
Fuse box (No.14) → RDU membrane controller [CN-376 (1)]

(1) Head light switch ON

Head light switch ON [CN-376 (13)] → Head light relay [CR-13 (85) → (87)]
→ Head light ON [CL-3 (1), CL-4 (1), CL-24 (1)]
→ I/conn [CN-7 (1)] → Cigar lighter [CL-2]
→ I/conn [CN-5 (60)] → Radio & USB player illumination ON [CN-27A (9)]

(2) Work light switch ON

Work light switch ON [CN-376 (4)] → Work light relay [CR-4 (85) → (87)]
→ I/conn [CN-12 (1)] → Work light ON [CL-5 (1), CL-6 (1)]

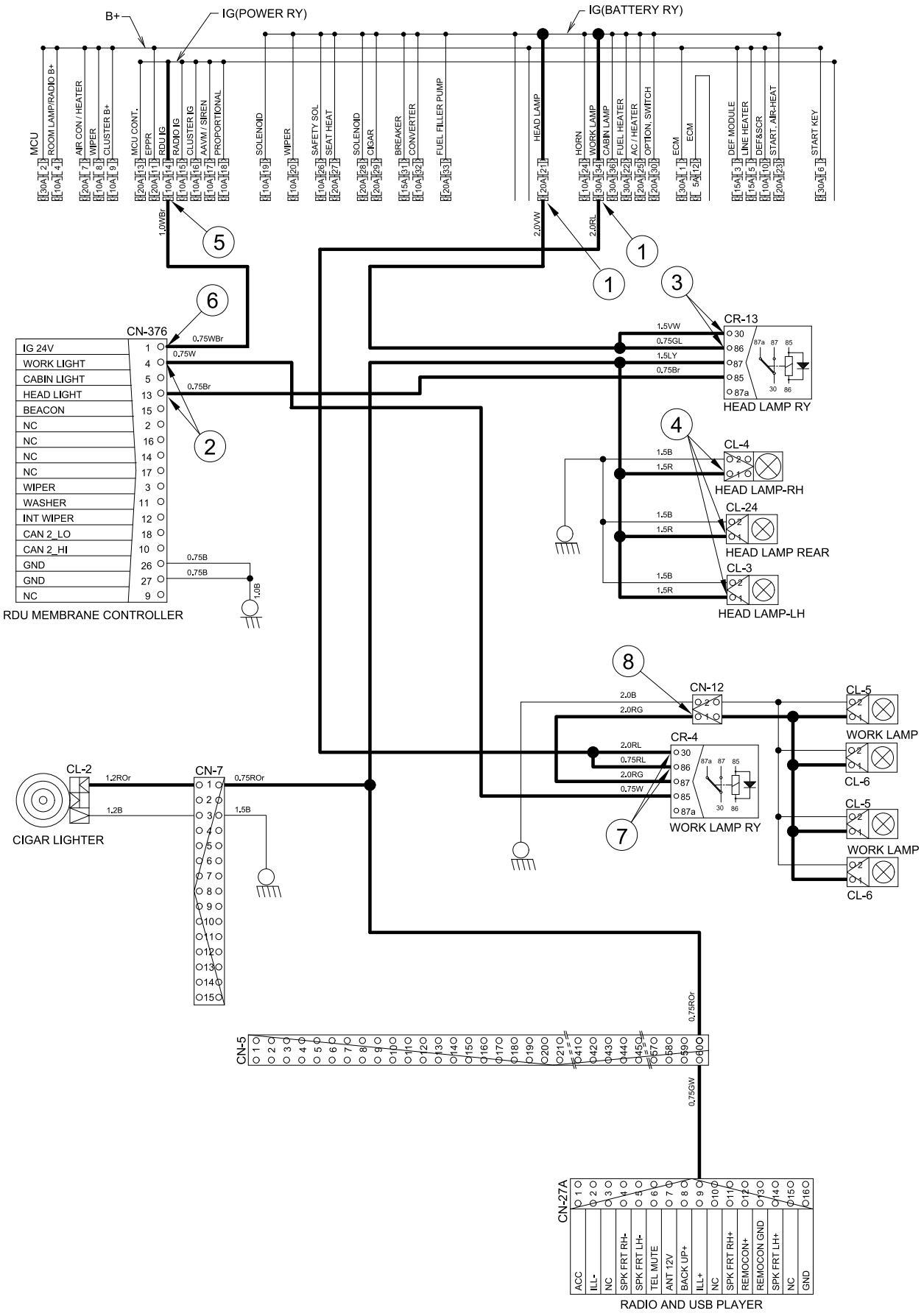
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power output) ③ - GND (head light relay) ④ - GND (head light) ⑤ - GND (fuse box) ⑥ - GND (switch power input) ⑦ - GND (work light relay) ⑧ - GND (work light)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

HEAD AND WORK LIGHT CIRCUIT (MACHINE SERIAL NO. : -#0162)



※ The circuit diagram may differ from the equipment, so please check before a repair.

HEAD AND WORK LIGHT CIRCUIT (MACHINE SERIAL NO. : #0163-)

1) OPERATING FLOW

Fuse box (No.21) → Head light relay [CR-13 (30, 86)]
Fuse box (No.34) → Work light relay [CR-4 (30, 86)]
Fuse box (No.14) → RDU membrane controller [CN-376 (1)]

(1) Head light switch ON

Head light switch ON [CN-376 (13)] → Head light relay [CR-13 (85) → (87)]
→ Head light ON [CL-3 (1), CL-4 (1), CL-24 (1)]
→ I/conn [CN-7 (1)] → Cigar lighter [CL-2]
→ I/conn [CN-5 (60)] → Radio & USB player illumination ON [CN-27A (9)]

(2) Work light switch ON

Work light switch ON [CN-376 (4)] → Work light relay [CR-4 (85) → (87)]
→ I/conn [CN-12 (1)] → Work light ON [CL-5 (1), CL-6 (1)]

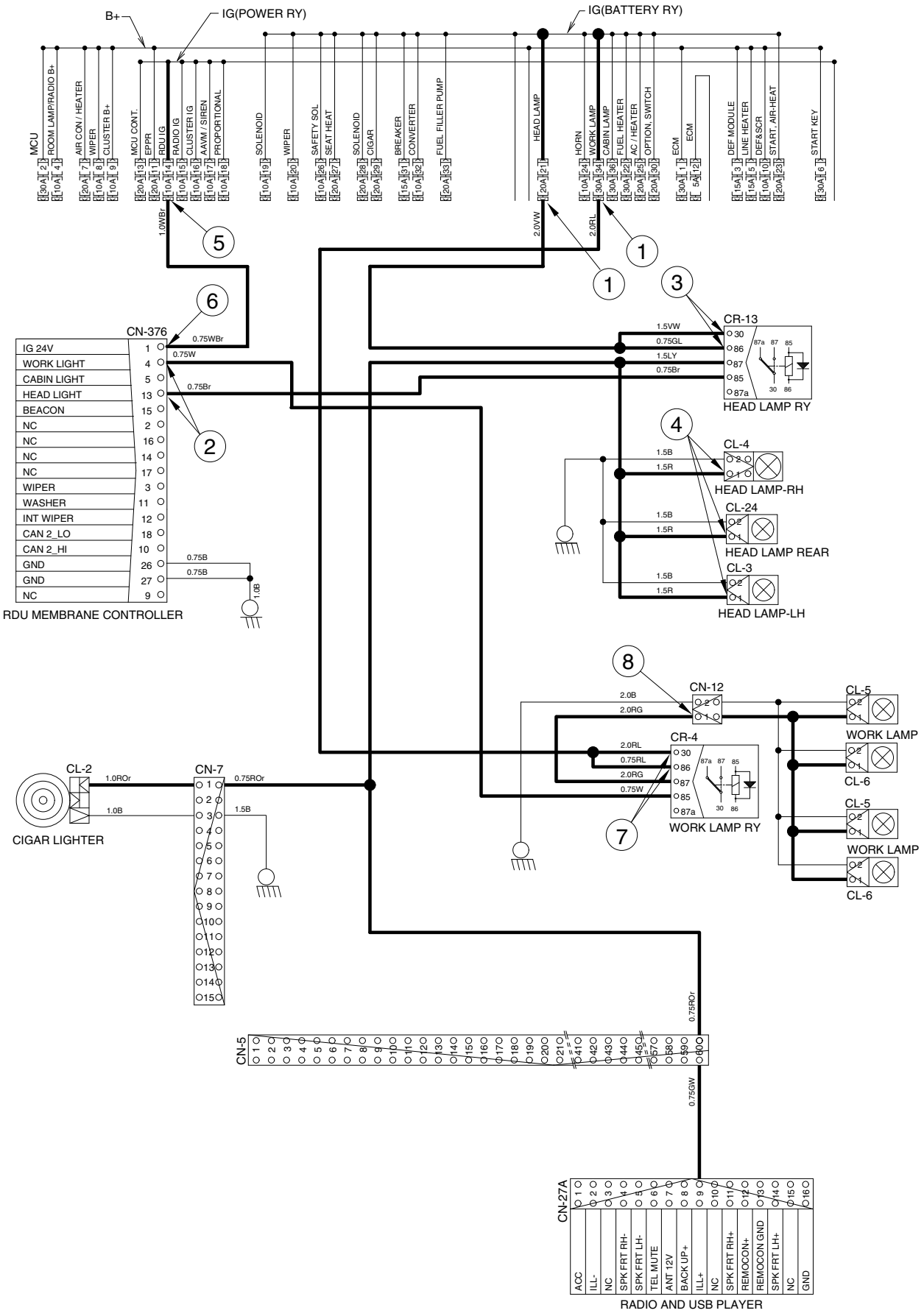
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power output) ③ - GND (head light relay) ④ - GND (head light) ⑤ - GND (fuse box) ⑥ - GND (switch power input) ⑦ - GND (work light relay) ⑧ - GND (work light)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

HEAD AND WORK LIGHT CIRCUIT (MACHINE SERIAL NO. : #0163-)



380A4EL08A

※ The circuit diagram may differ from the equipment, so please check before a repair.

5. BEACON LAMP AND CAB LIGHT CIRCUIT (MACHINE SERIAL NO. : -#0162)

1) OPERATING FLOW

Fuse box (No.30) → Beacon lamp relay [CR-85 (2, 3)]
Fuse box (No.36) → Cab light relay [CR-9 (30, 86)]
Fuse box (No.14) → RDU membrane controller [CN-376 (1)]

(1) Beacon lamp switch ON

Beacon lamp switch ON [CN-376 (15)] → Beacon lamp relay [CR-85 (1)→ (5)]
→ I/conn [CN-5 (50)] → I/conn [CN-10 (10)] → Beacon lamp ON [CL-7]

(2) Cab light switch ON

Cab light switch ON [CN-376 (5)] → Cab lamp relay [CR-9 (85)→ (87)]
→ I/conn [CN-5 (34, 38)] → I/conn [CN-10 (11)] → Cab light ON [CL-8 (2)]
→ I/conn [CN-10 (12)] → Cab light ON [CL-9 (2), CL-10 (2)]

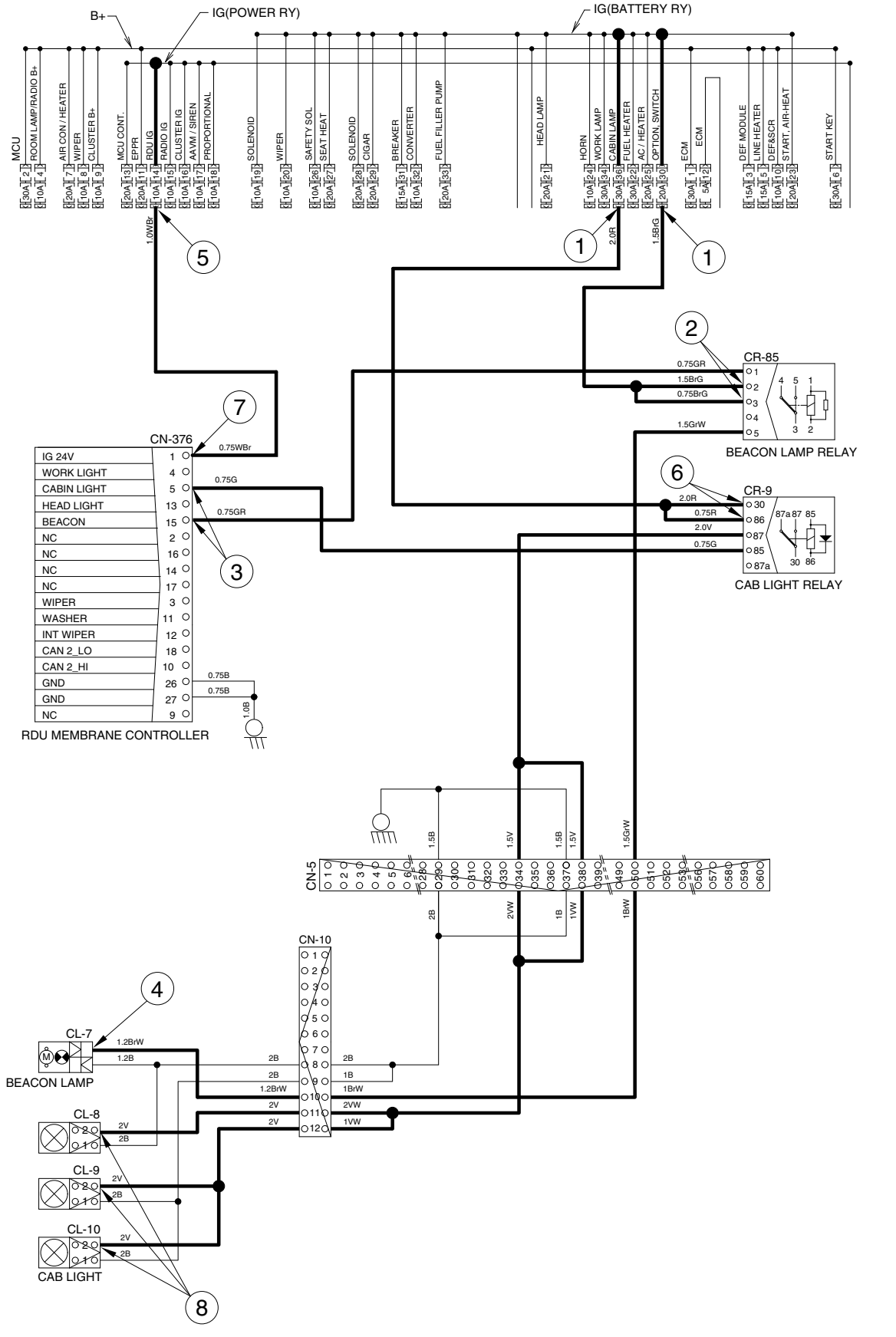
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (beacon lamp relay) ③ - GND (switch power output) ④ - GND (beacon lamp) ⑤ - GND (fuse box) ⑥ - GND (cabin light relay) ⑦ - GND (switch power input) ⑧ - GND (cab light)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

BEACON LAMP AND CAB LIGHT CIRCUIT (MACHINE SERIAL NO. : -#0162)



380A4EL09A

※ The circuit diagram may differ from the equipment, so please check before a repair.

BEACON LAMP AND CAB LIGHT CIRCUIT (MACHINE SERIAL NO. : #0163-)

1) OPERATING FLOW

Fuse box (No.30) → Beacon lamp relay [CR-85 (2, 3)]
Fuse box (No.36) → Cab light relay [CR-9 (30, 86)]
Fuse box (No.14) → RDU membrane controller [CN-376 (1)]

(1) Beacon lamp switch ON

Beacon lamp switch ON [CN-376 (15)] → Beacon lamp relay [CR-85 (1)→ (5)]
→ I/conn [CN-5 (50)] → I/conn [CN-10 (10)] → Beacon lamp ON [CL-7 (2)]

(2) Cab light switch ON

Cab light switch ON [CN-376 (5)] → Cab lamp relay [CR-9 (85)→ (87)]
→ I/conn [CN-5 (34, 38)] → I/conn [CN-10 (11)] → Cab light ON [CL-8 (2)]
→ I/conn [CN-10 (12)] → Cab light ON [CL-9 (2), CL-10 (2)]

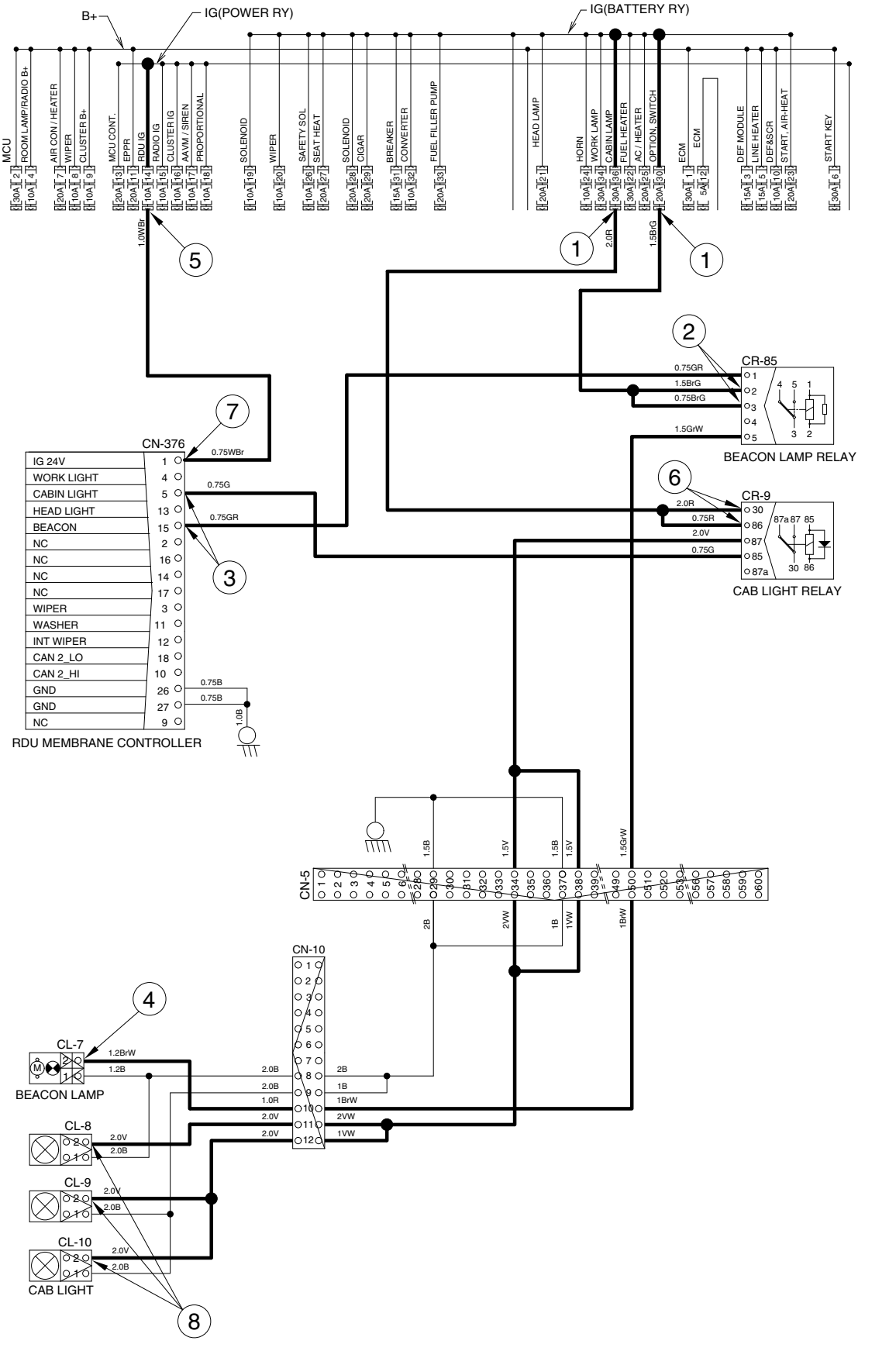
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (beacon lamp relay) ③ - GND (switch power output) ④ - GND (beacon lamp) ⑤ - GND (fuse box) ⑥ - GND (cabin light relay) ⑦ - GND (switch power input) ⑧ - GND (cab light)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

BEACON LAMP AND CAB LIGHT CIRCUIT (MACHINE SERIAL NO. : #0163-)



380A4EL09B

※ The circuit diagram may differ from the equipment, so please check before a repair.

6. WIPER AND WASHER CIRCUIT (MACHINE SERIAL NO. : -#0162)

1) OPERATING FLOW

(1) Key switch ON

Fuse box (No.14) → RDU membrance controller [CN-376 (1)]

Fuse box (No.8) → I/conn [CN-5 (18)] → I/conn [CN-17 (5)] → Wiper motor controller [CN-141 (7)]
→ Wiper motor [CN-21 (4)]

Fuse box (No.20) → I/conn [CN-5 (16)] → I/conn [CN-17 (4)] → Wiper motor controller [CN-141 (6)]
→ Low wiper motor [CN-407 (3)]
→ Washer pump [CN-22 (2)]

(2) Wiper switch ON (Intermittent)

Wiper switch ON [CN-376 (12)] → I/conn [CN-5 (20)] → I/conn [CN-17 (8)]
→ Wiper motor controller [CN-141 (10)→(3)] → Wiper motor [CN-21 (6)] → Intermittently operating

(3) Wiper switch ON (continual)

Wiper switch ON [CN-376 (3)] → I/conn[CN-5 (15)] → I/conn[CN-17 (2)]
→ Wiper motor controller [CN-141 (2) → (4)] → Wiper motor [CN-21 (2)] → Continual operating

(4) Washer switch ON

Washer switch ON [CN-376 (11)] → I/conn [CN-5 (17)] → I/conn [CN-17 (7)]
→ Wiper motor controller [CN-141 (9) → (8)] → I/conn [CN-17 (6)] → I/conn [CN-5 (19)]
→ Washer pump [CN-22 (1)] → Washer operating

Wiper switch ON [CN-376 (3)] → I/conn[CN-5 (15)] → I/conn[CN-17 (2)]
→ Wiper motor controller [CN-141 (2) → (4)] → Wiper motor [CN-21 (2)] → Continual operating

(5) Auto parking (when switch OFF)

Switch OFF [CN-376 (3, 12)] → Wiper motor parking position by wiper motor controller

2) OPERATING FLOW (LOW WIPER)

(1) Key switch ON

Fuse box (No. 30) → I/conn [CN-7 (8)] → Low wiper switch [CS-79 (1, 5)]

(2) Wiper switch ON (1st)

Wiper switch ON [CS-79 (1 → 2)] → I/conn [CN-7 (5)] → Wiper motor [CN-407 (4)] → Wiper operating

(3) Wiper switch ON (2nd)

Wiper switch ON [CS-79 (5 → 4)] → I/conn [CN-7 (6)] → I/conn [NC-18 (2)] → Washer pump [CN-407 (2)]
→ Washer operating

Wiper switch ON [CS-79 (1 → 2)] → I/conn [CN-7 (5)] → Wiper motor [CN-407 (4)] → Wiper operating

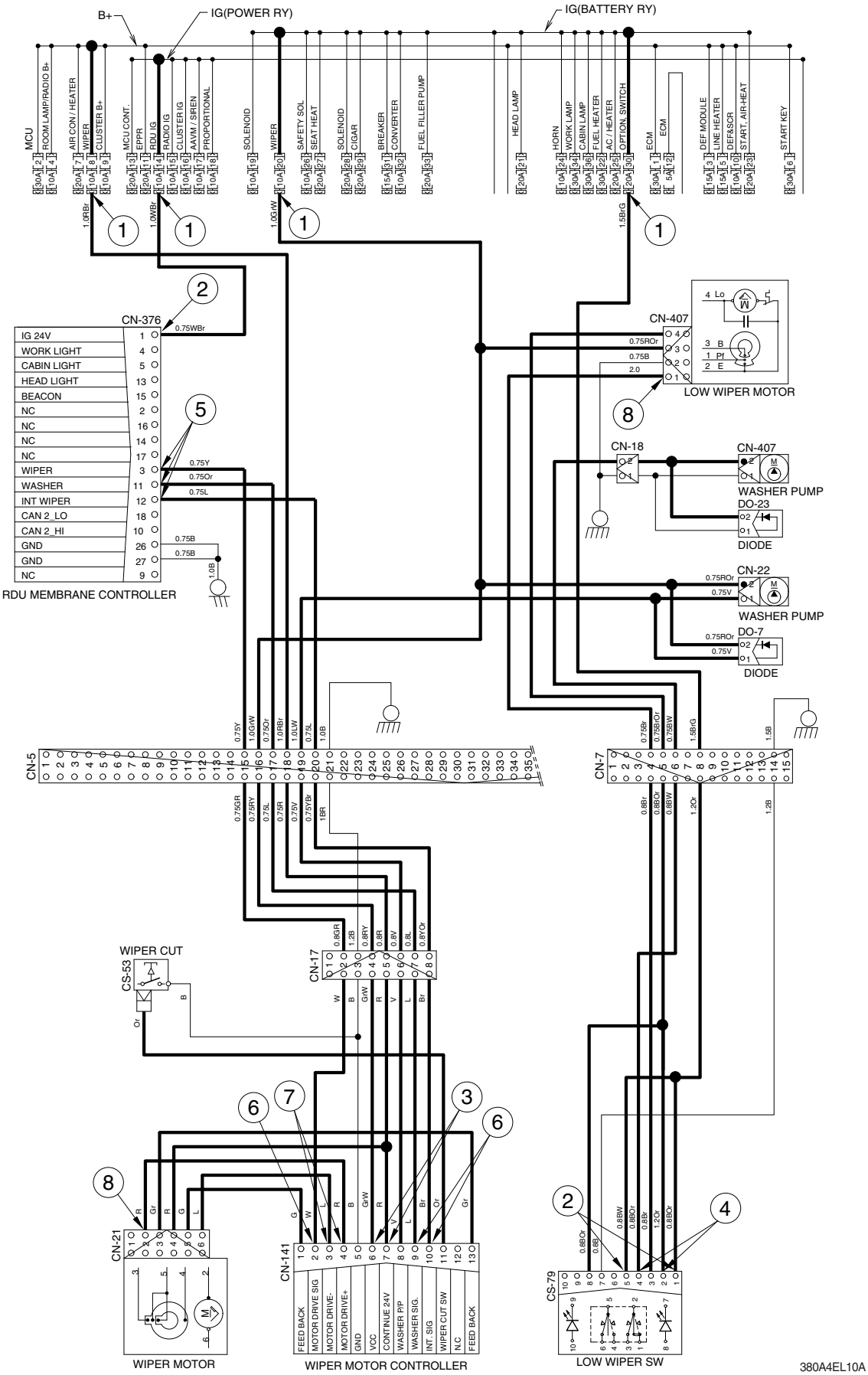
3) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power input) ③ - GND (wiper power input) ④ - GND (switch power output)	20~25V
		⑤ - GND (switch power output) ⑥ - GND (wiper switch power input)	0 ~ 5V
		⑦ - GND (wiper power output)	24V
		⑧ - GND (wiper motor)	0 or 24V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

WIPER AND WASHER CIRCUIT (MACHINE SERIAL NO. : -#0162)



※ The circuit diagram may differ from the equipment, so please check before a repair.

6. WIPER AND WASHER CIRCUIT (MACHINE SERIAL NO. : #0163-)

1) OPERATING FLOW

(1) Key switch ON

Fuse box (No.14) → RDU membrance controller [CN-376 (1)]

Fuse box (No.8) → I/conn [CN-5 (18)] → I/conn [CN-17 (5)] → Wiper motor controller [CN-141 (7)]
→ Wiper motor [CN-21 (4)]

Fuse box (No.20) → I/conn [CN-5 (16)] → I/conn [CN-17 (4)] → Wiper motor controller [CN-141 (6)]
→ Low wiper motor [CN-407 (3)]
→ Washer pump [CN-22 (2)]

(2) Wiper switch ON (Intermittent)

Wiper switch ON [CN-376 (12)] → I/conn [CN-5 (20)] → I/conn [CN-17 (8)]
→ Wiper motor controller [CN-141 (10)→(3)] → Wiper motor [CN-21 (6)] → Intermittently operating

(3) Wiper switch ON (continual)

Wiper switch ON [CN-376 (3)] → I/conn[CN-5 (15)] → I/conn[CN-17 (2)]
→ Wiper motor controller [CN-141 (2) → (4)] → Wiper motor [CN-21 (2)] → Continual operating

(4) Washer switch ON

Washer switch ON [CN-376 (11)] → I/conn [CN-5 (17)] → I/conn [CN-17 (7)]
→ Wiper motor controller [CN-141 (9) → (8)] → I/conn [CN-17 (6)] → I/conn [CN-5 (19)]
→ Washer pump [CN-22 (1)] → Washer operating

Wiper switch ON [CN-376 (3)] → I/conn[CN-5 (15)] → I/conn[CN-17 (2)]
→ Wiper motor controller [CN-141 (2) → (4)] → Wiper motor [CN-21 (2)] → Continual operating

(5) Auto parking (when switch OFF)

Switch OFF [CN-376 (3, 12)] → Wiper motor parking position by wiper motor controller

2) OPERATING FLOW (LOW WIPER)

(1) Key switch ON

Fuse box (No. 30) → I/conn [CN-7 (8)] → Low wiper switch [CS-79 (1, 5)]

(2) Wiper switch ON (1st)

Wiper switch ON [CS-79 (1 → 2)] → I/conn [CN-7 (5)] → Wiper motor [CN-407 (4)] → Wiper operating

(3) Wiper switch ON (2nd)

Wiper switch ON [CS-79 (5 → 4)] → I/conn [CN-7 (6)] → I/conn [NC-18 (2)] → Washer pump [CN-407 (2)]
→ Washer operating

Wiper switch ON [CS-79 (1 → 2)] → I/conn [CN-7 (5)] → Wiper motor [CN-407 (4)] → Wiper operating

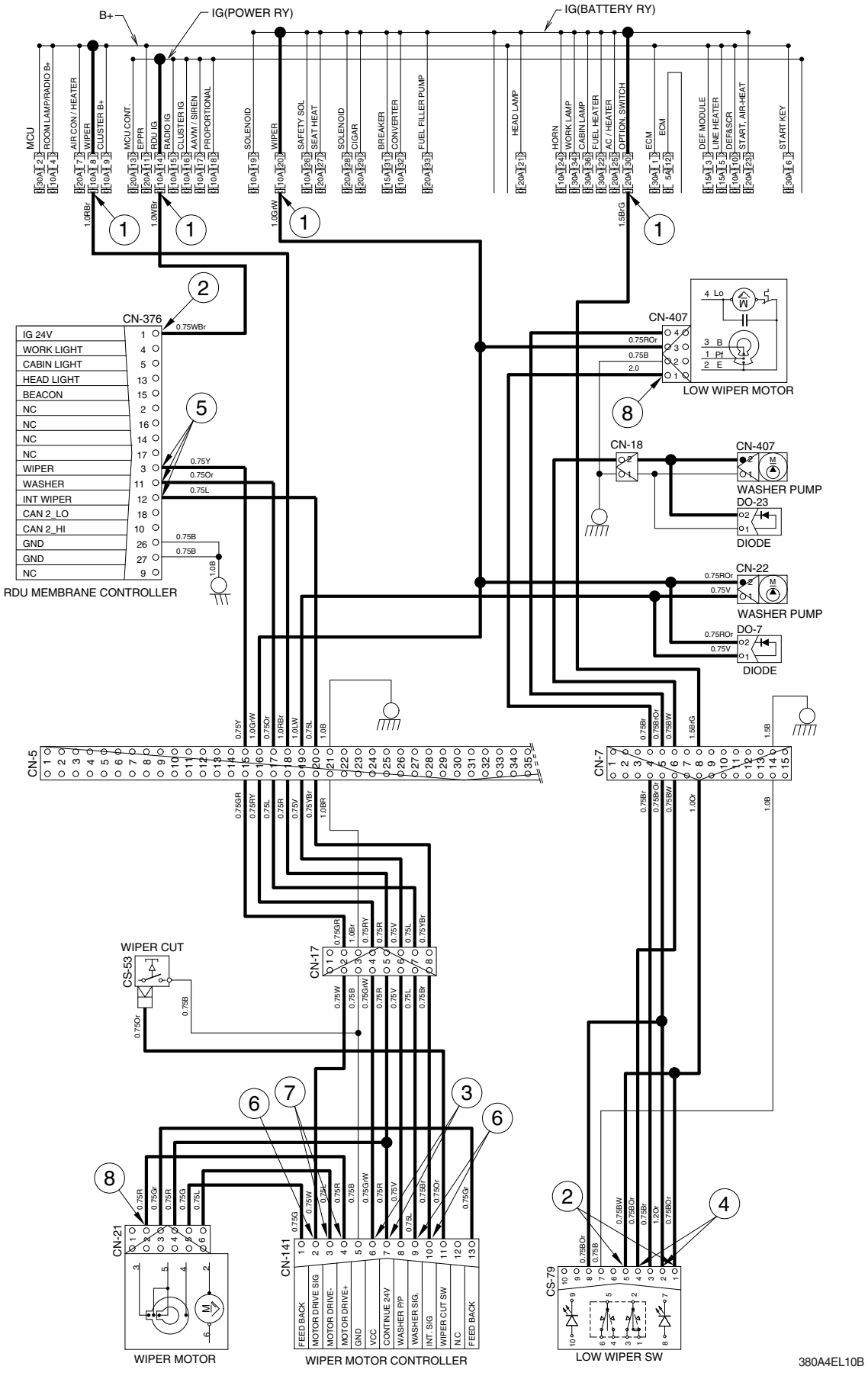
3) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power input) ③ - GND (wiper power input) ④ - GND (switch power output)	20~25V
		⑤ - GND (switch power output) ⑥ - GND (wiper switch power input)	0 ~ 5V
		⑦ - GND (wiper power output)	24V
		⑧ - GND (wiper motor)	0 or 24V

※ GND : Ground

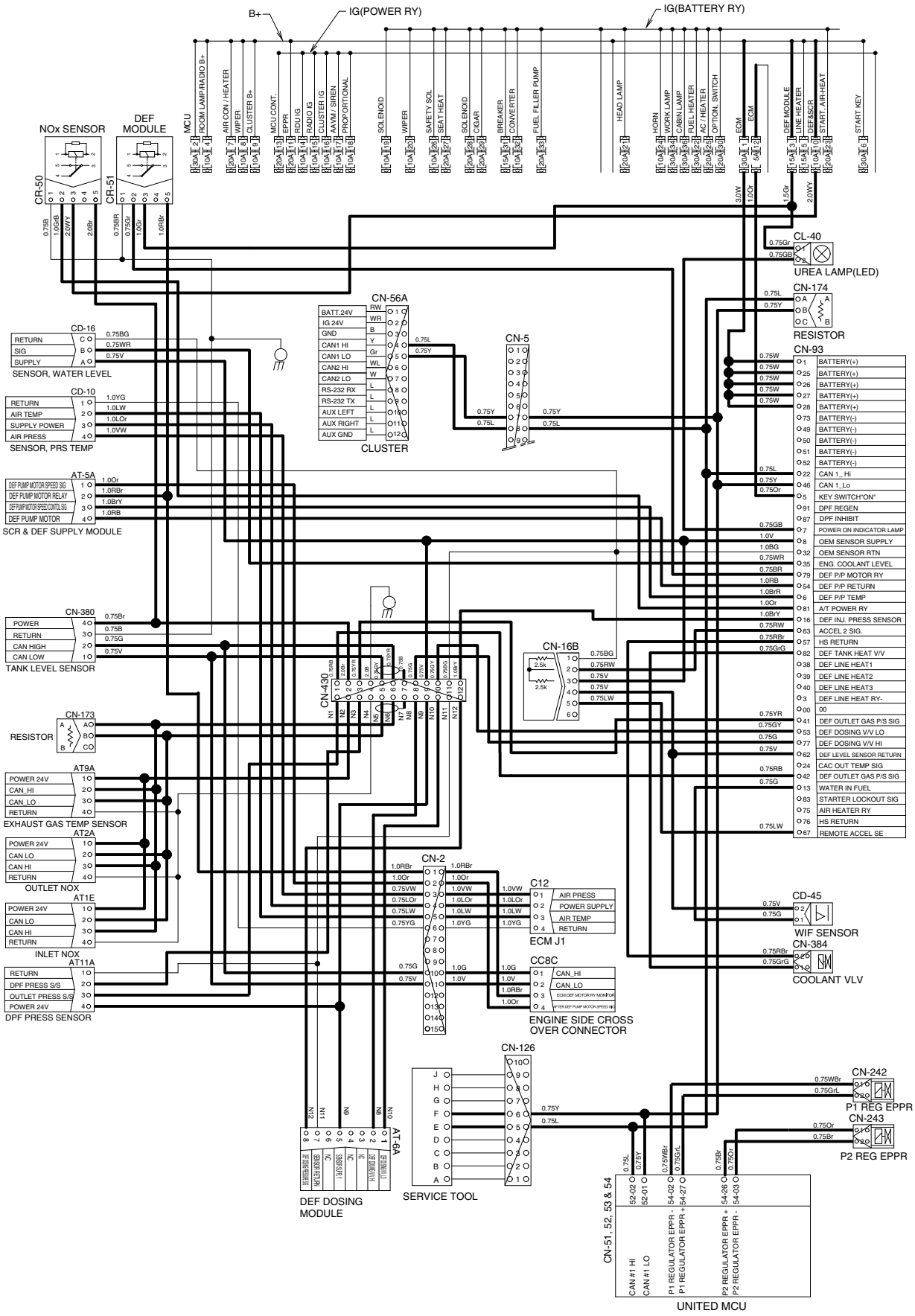
※ The circuit diagram may differ from the equipment, so please check before a repair.

WIPER AND WASHER CIRCUIT (MACHINE SERIAL NO. : #0163-)



※ The circuit diagram may differ from the equipment, so please check before a repair.

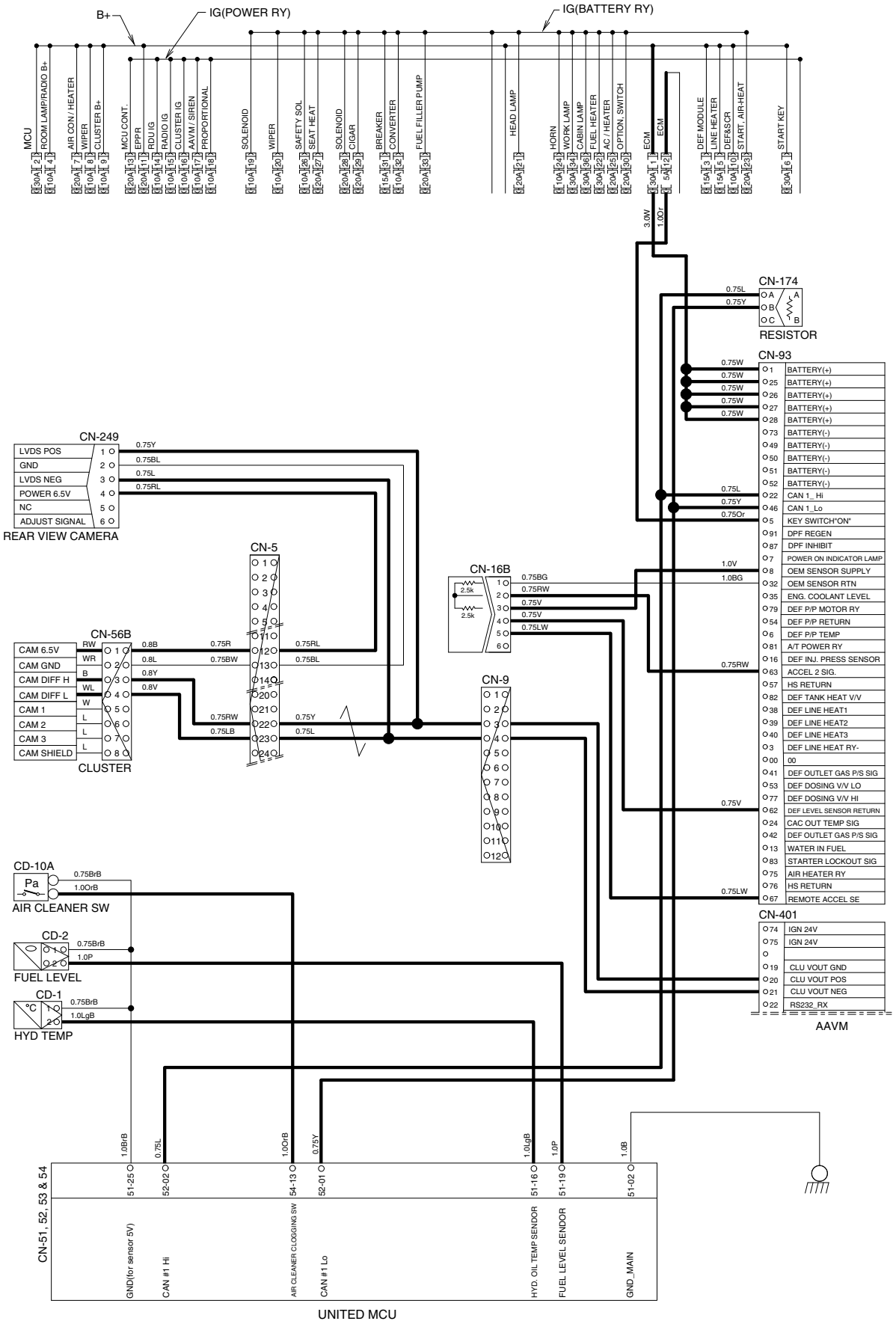
7. CONTROLLER CIRCUIT (MACHINE SERIAL NO. : #0001-)



380A4EL11A

※ The circuit diagram may differ from the equipment, so please check before a repair.

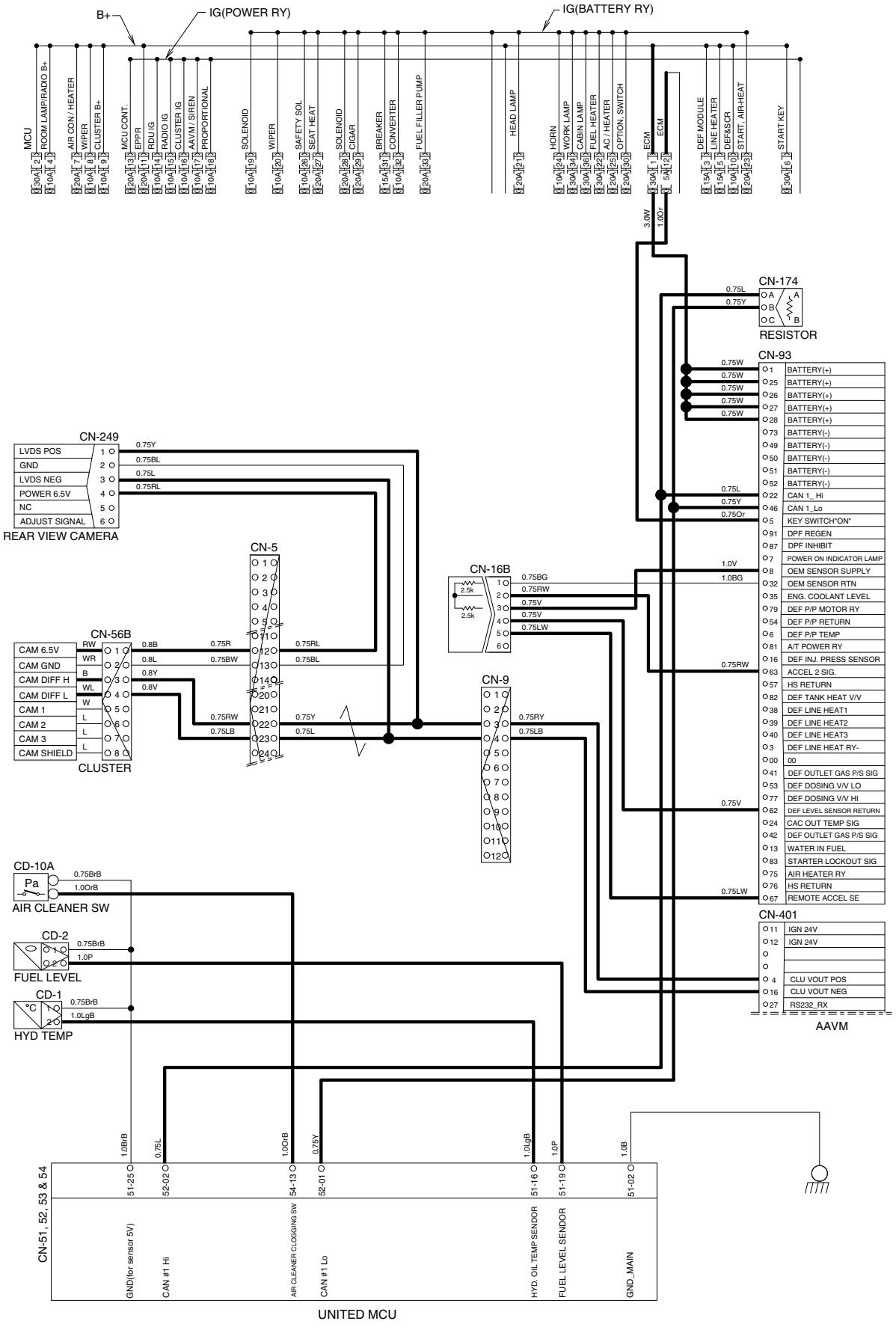
8. MONITORING CIRCUIT (MACHINE SERIAL NO. : -#0003)



380A4EL12

※ The circuit diagram may differ from the equipment, so please check before a repair.

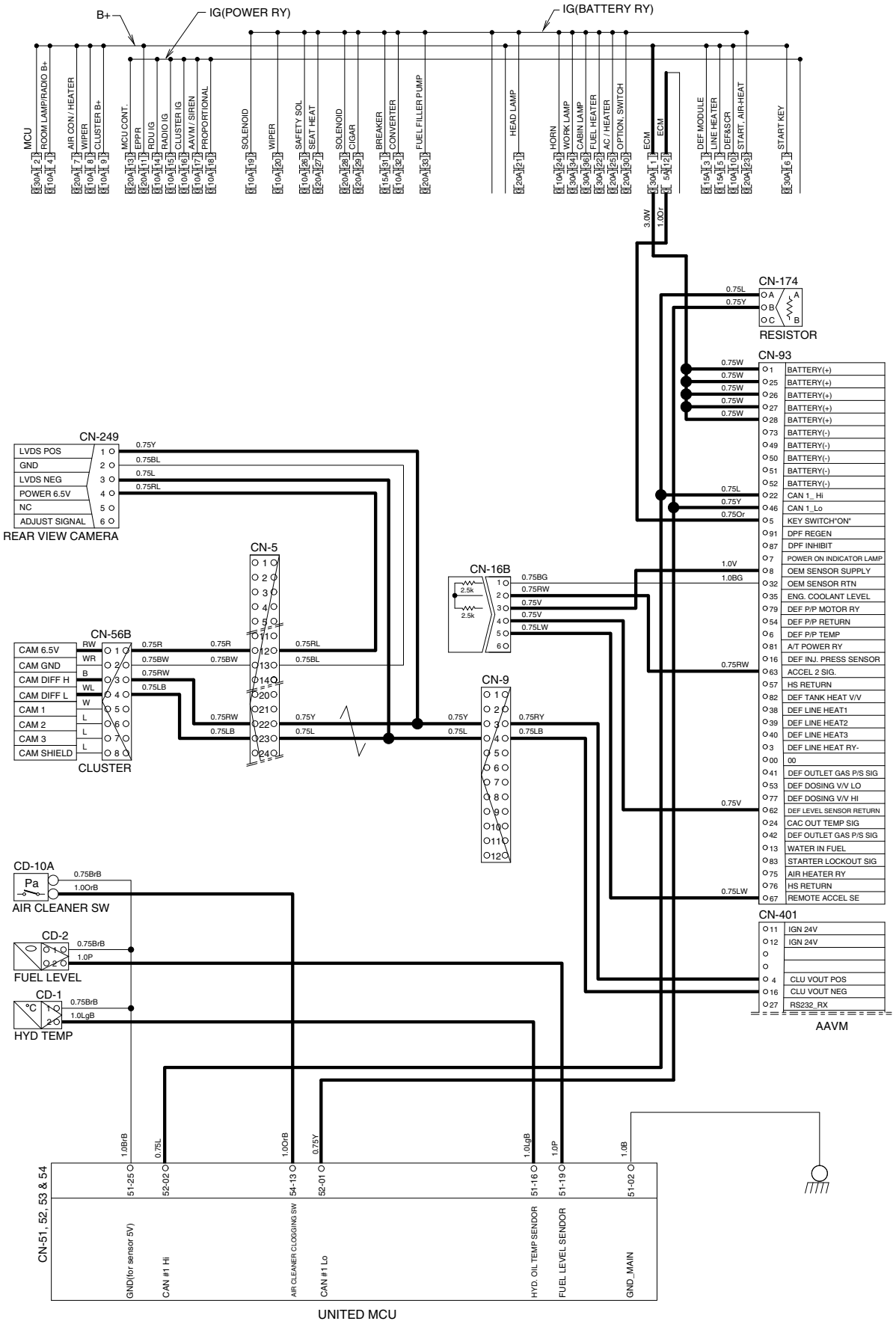
MONITORING CIRCUIT (MACHINE SERIAL NO. : #0004-#0162)



380A4EL12A

※ The circuit diagram may differ from the equipment, so please check before a repair.

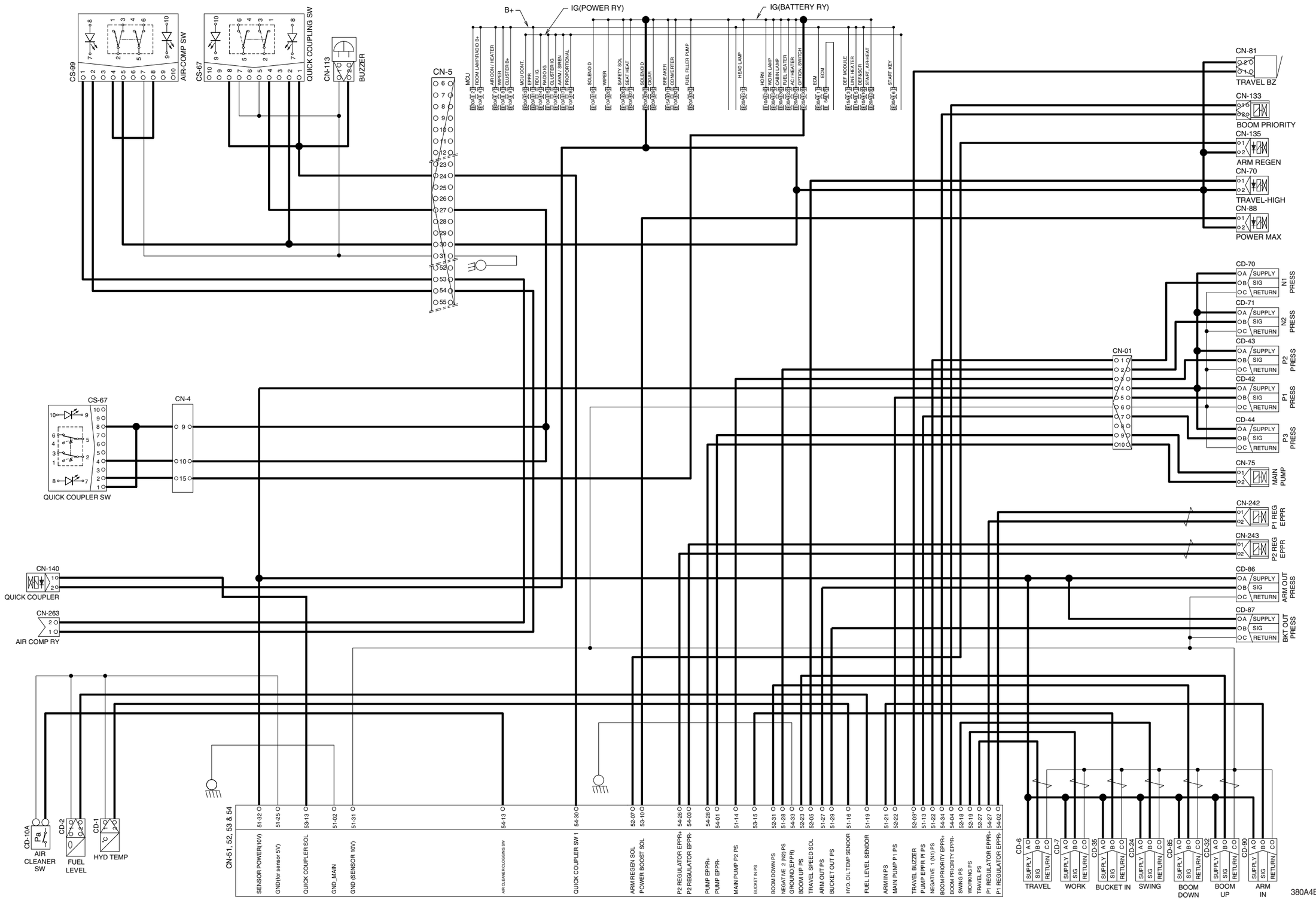
MONITORING CIRCUIT (MACHINE SERIAL NO. : #0163-)



380A4EL12B

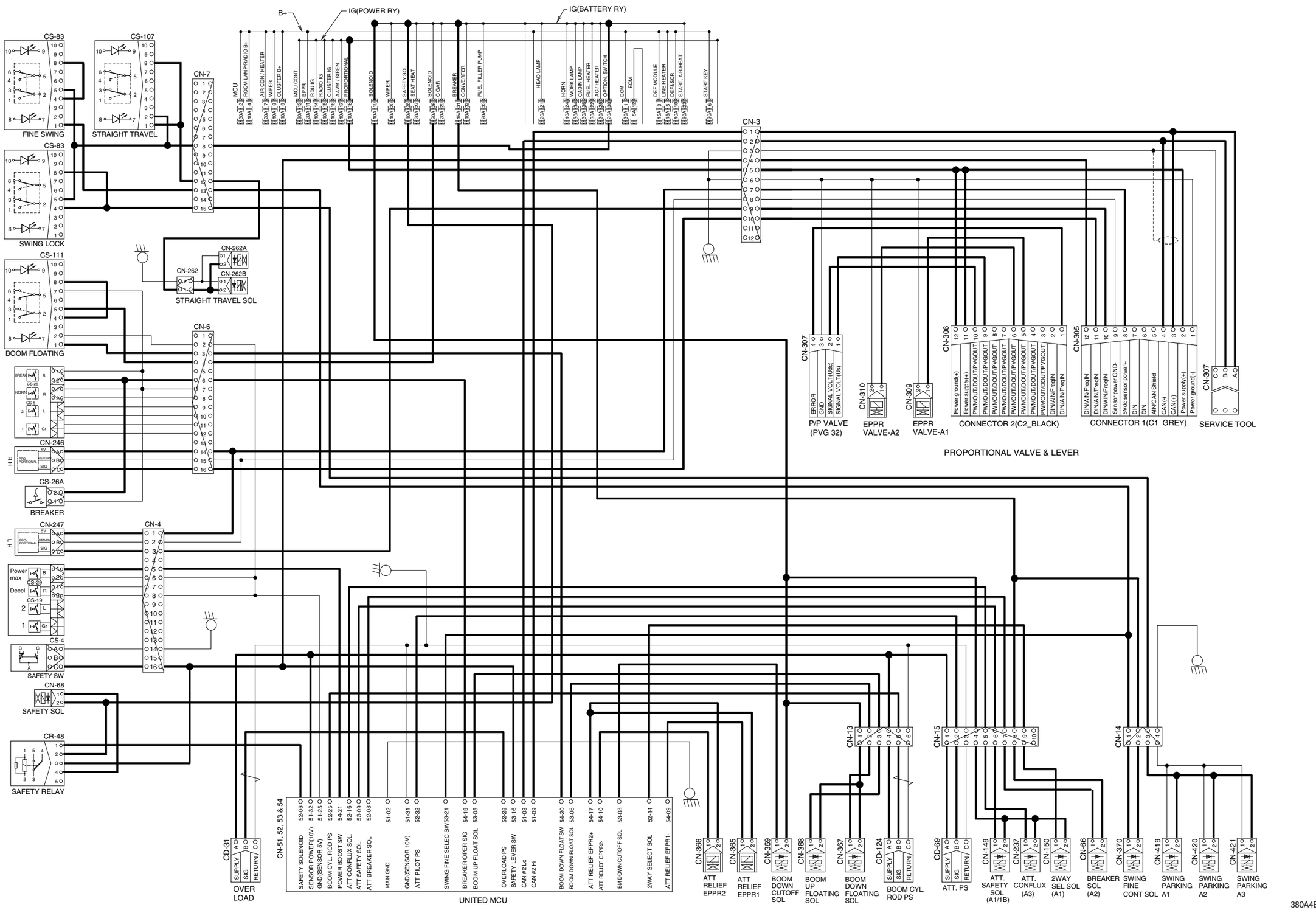
※ The circuit diagram may differ from the equipment, so please check before a repair.

9. ELECTRIC CIRCUIT FOR HYDRAULIC (1/2, MACHINE SERIAL NO. : #0001-)



※ The circuit diagram may differ from the equipment, so please check before a repair.

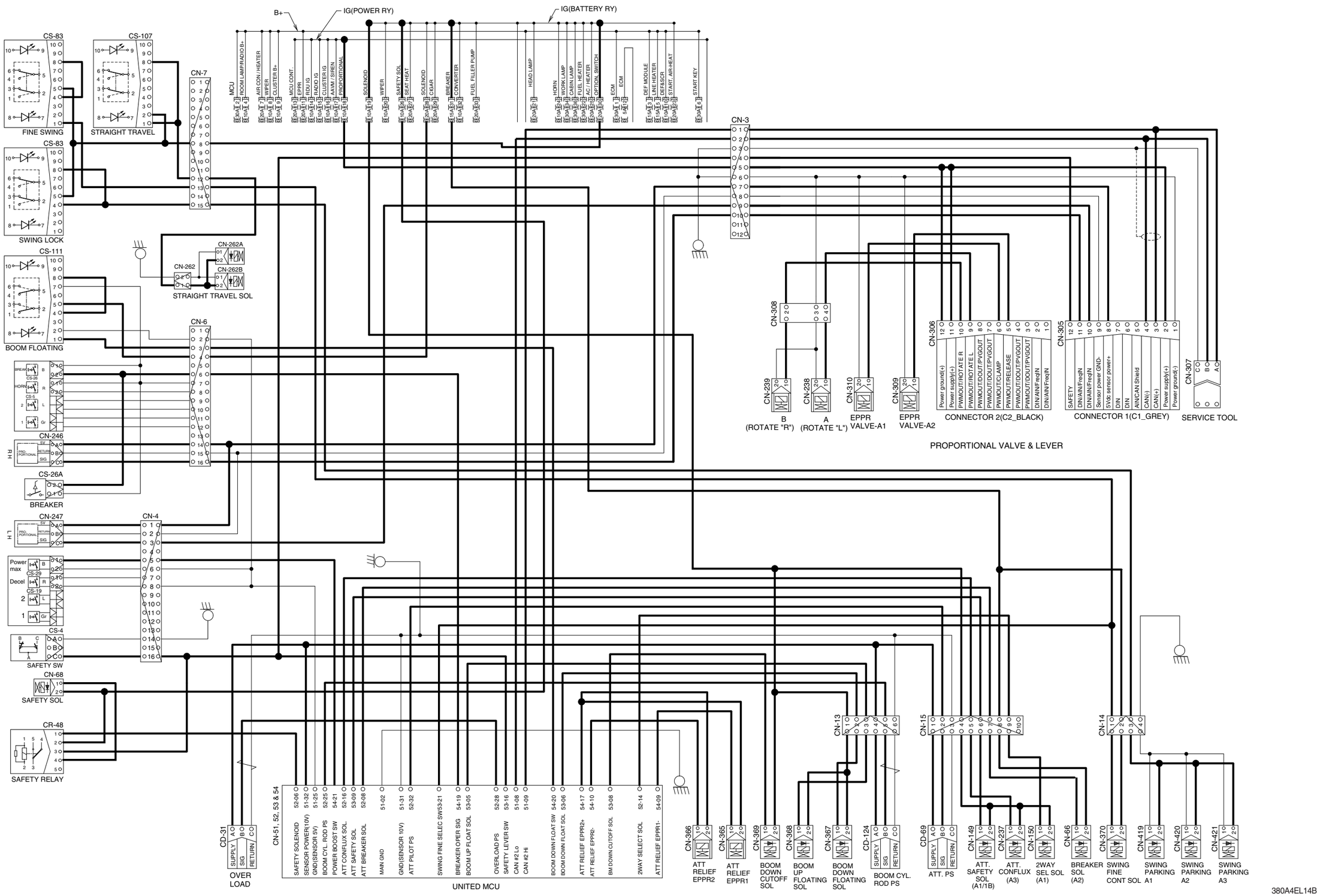
10. ELECTRIC CIRCUIT FOR HYDRAULIC (2/2, MACHINE SERIAL NO. : -#0003)



380A4EL14A

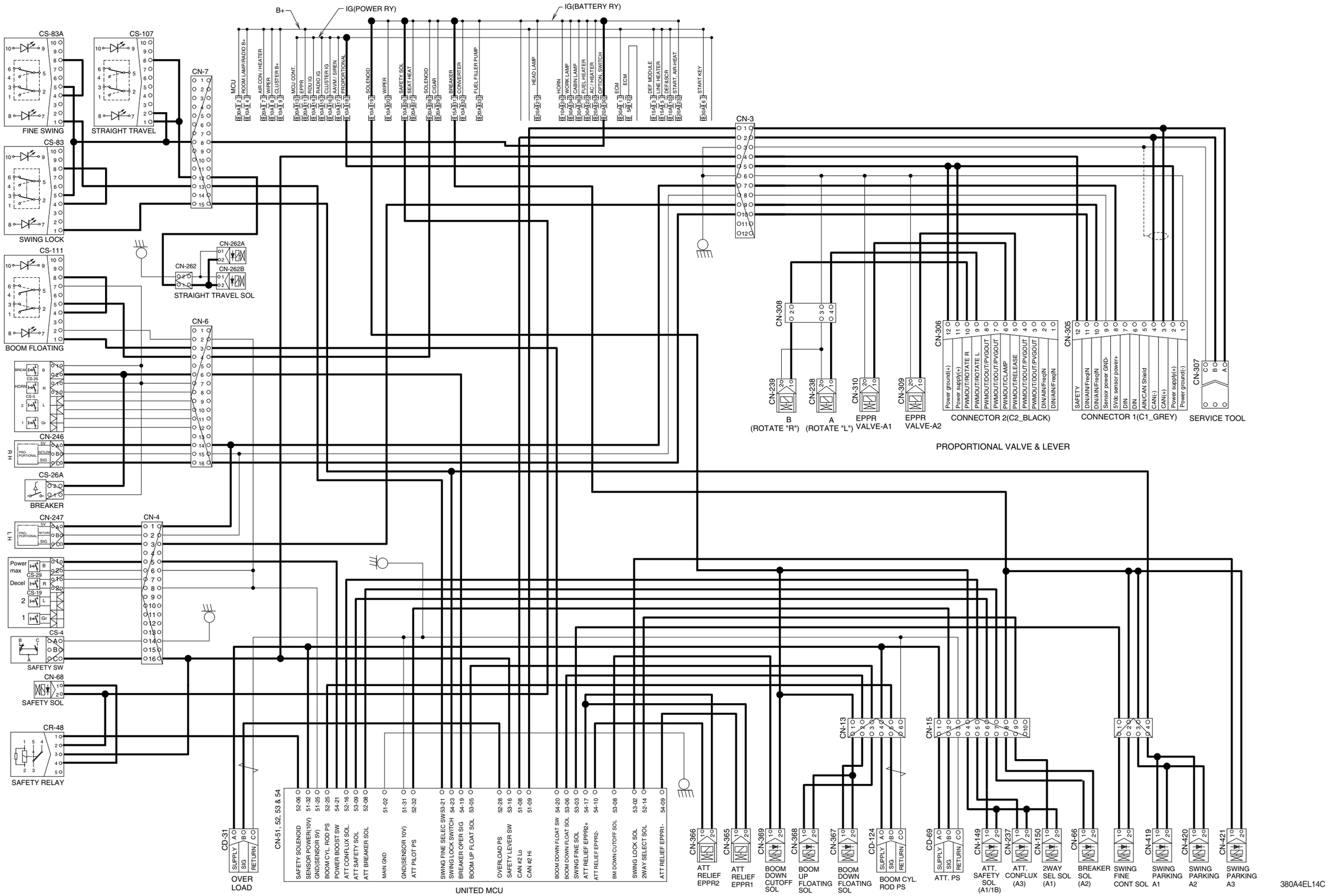
※ The circuit diagram may differ from the equipment, so please check before a repair.

ELECTRIC CIRCUIT FOR HYDRAULIC (2/2, MACHINE SERIAL NO. : #0004-#0162)



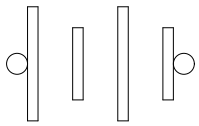
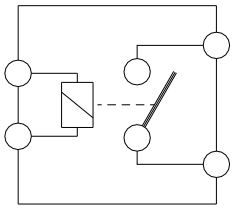
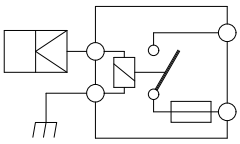
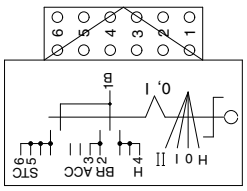
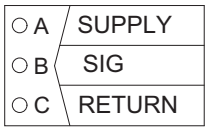
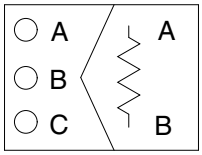
※ The circuit diagram may differ from the equipment, so please check before a repair.

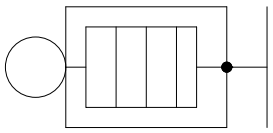
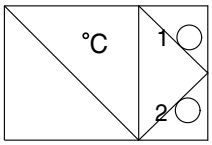
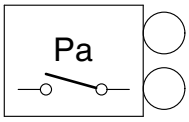
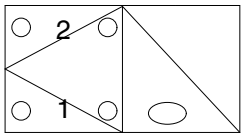
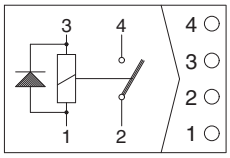
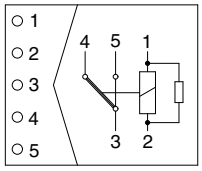
ELECTRIC CIRCUIT FOR HYDRAULIC (2/2, MACHINE SERIAL NO. : #0163-)

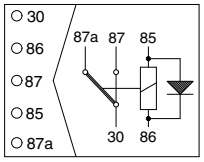
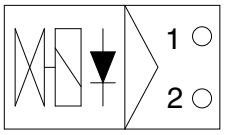
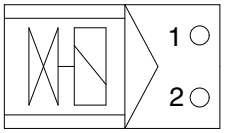
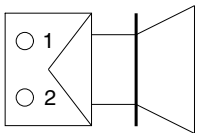
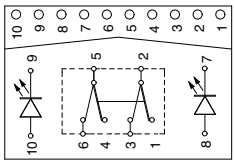
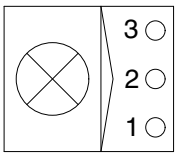


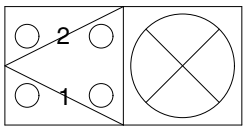
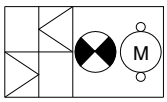
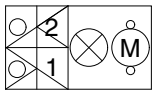
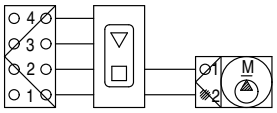
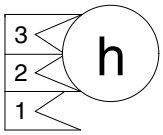
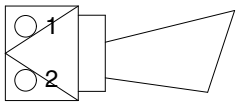
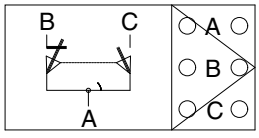
※ The circuit diagram may differ from the equipment, so please check before a repair.

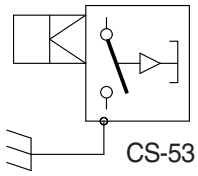
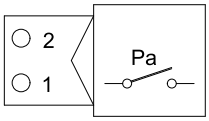
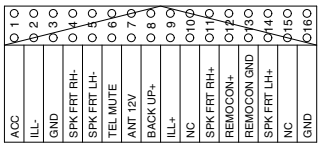
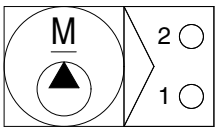
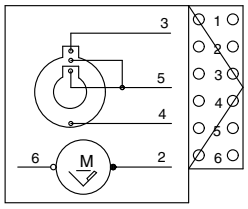
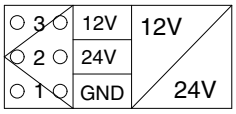
GROUP 3 ELECTRICAL COMPONENT SPECIFICATION

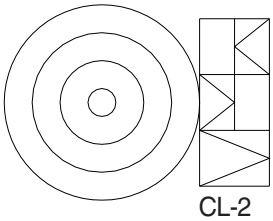
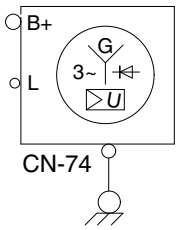
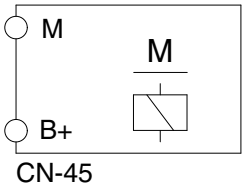
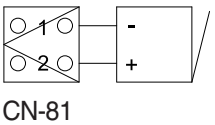
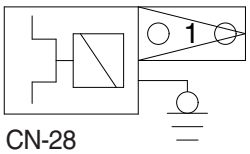
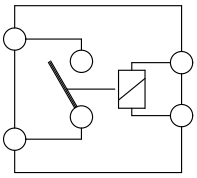
Part name	Symbol	Specifications	Check
Battery		12V × 160Ah (2EA)	※ Check specific gravity 1.280 over : Over charged 1.280 ~ 1.250 : Normal 1.250 below : Recharging
Battery relay	 CR-1	Rated load : 24V 100A (continuity) 1000A (30seconds)	※ Check coil resistance(M4 to M4) Normal : About 50Ω ※ Check contact Normal : ∞Ω
Glow plug relay	 CR-24	24V 200A	※ Check contact Normal : 0.942Ω (for terminal 1-GND)
Start key	 CS-2A	B-BR : 24V 1A B-ACC : 24V 10A B-ST : 24V 40A	※ Check contact OFF : ∞Ω (for each terminal) ON : 0Ω (for terminal 1-3 and 1-2) START : 0Ω (for terminal 1-6)
Pressure sensor	 CD-6 CD-7 CD-16 CD-24 CD-31 CD-32 CD-35 CD-42 CD-43 CD-44 CD-69 CD-70 CD-71 CD-85 CD-86 CD-87 CD-90 CD-124	8~30V	※ Check contact Normal : 0.1Ω
Resistor	 CN-173 CN-174	3W	※ Check resistance A-B : 120Ω

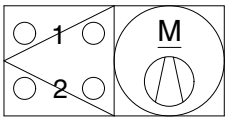
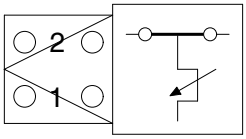
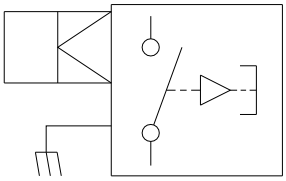
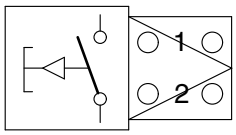
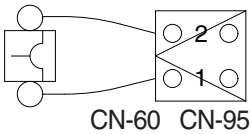
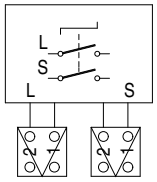
Part name	Symbol	Specifications	Check
Glow plug	 CN-80	24V 200A	※ Check resistance 0.25~0.12Ω
Temperature sensor (hydraulic)	 CD-1	-	※ Check resistance 50˚C : 804Ω 80˚C : 310Ω 100˚C : 180Ω
Air cleaner pressure switch (-#00040)	 CD-10A	(N.O TYPE)	※ Check contact High level : ∞Ω Low level : 0Ω
Fuel sender	 CD-2	-	※ Check resistance Full : 50Ω 6/12 : 350Ω 11/12 : 100Ω 5/12 : 400Ω 10/12 : 150Ω 4/12 : 450Ω 9/12 : 200Ω 3/12 : 500Ω 8/12 : 250Ω 2/12 : 550Ω 7/12 : 300Ω 1/12 : 600Ω Empty warning : 700Ω
Relay (air con blower)		24V 20A	※ Check resistance Normal : About 200Ω (for terminal 1-3) 0 Ω (for terminal 2-4)
Relay	 CR-2 CR-5 CR-36 CR-39 CR-48 CR-50 CR-51 CR-85	24V 16A	※ Check resistance Normal : About 160 Ω (for terminal 1-2) 0Ω (for terminal 3-4) ∞Ω (for terminal 3-5)

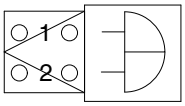
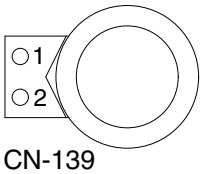
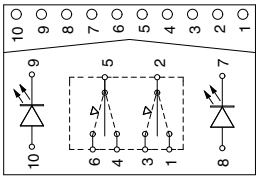
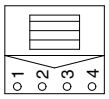
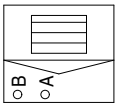
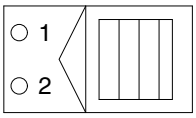
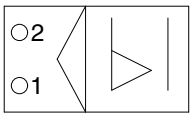
Part name	Symbol	Specifications	Check
Relay	 CR-4 CR-7 CR-9 CR-13 CR-35 CR-46 CR-52	24V 16A	※ Check resistance Normal : About 160 Ω (for terminal 85-86) 0Ω(for terminal 30-87a) ∞Ω(for terminal 30-87)
Solenoid valve	 CN-66 CN-68 CN-70 CN-88 CN-135 CN-140 CN-149 CN-150 CN-237 CN-262A CN-262B CN-367 CN-368 CN-369 CN-370 CN-419 CN-420 CN-421	24V 1A	※ Check resistance Normal : 15~25Ω (for terminal 1-2)
EPPR valve	 CN-75 CN-133 CN-238 (#0004-) CN-239 (#0004-) CN-242 CN-154 CN-243 CN-309 CN-310 CN-365 CN-366	700mA	※ Check resistance Normal : 15~25Ω (for terminal 1-2)
Speaker	 CN-23(LH) CN-260 CN-24(RH)	20W	※ Check resistance Normal : A few Ω
Switch (locking type)	 CS-52 CS-67 CS-73 CS-83 CS-83A (#0163-) CS-99 CS-107 CS-108 CS-111	24V 1.5A	※ Check contact Normal ON : ∞ Ω(for terminal 2-3, 5-6) 0 Ω(for terminal 2-1, 5-4) OFF : 0 Ω(for terminal 2-3, 5-6) ∞ Ω(for terminal 2-1, 5-4)
Room lamp	 CL-1	24V 10W	※ Check disconnection Normal : 1.0Ω ON : 0Ω(For terminal 1-2) ∞Ω(For terminal 1-3) OFF : ∞Ω(For terminal 1-2) 0Ω(For terminal 1-3)

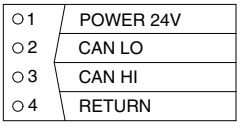
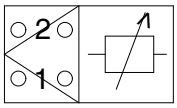
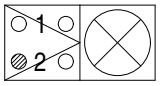
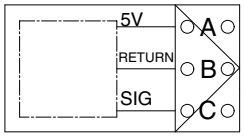
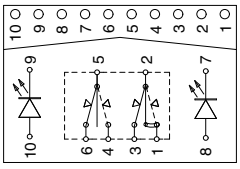
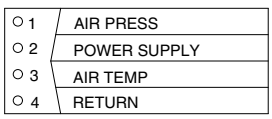
Part name	Symbol	Specifications	Check
Head lamp, Work lamp, Cab lamp	 CL-3 CL-4 CL-5 CL-6 CL-8 CL-9 CL-10 CL-24	24V 65W (H3 Type)	※ Check disconnection Normal : 1.2Ω
Beacon lamp	-#0162  #0163-  CL-7	21V 70W (H1 Type)	※ Check disconnection Normal : A few Ω
Fuel filler pump	 CN-61	24V 10A 35 ℓ /min	※ Check resistance Normal : 1.0Ω
Hour meter	 CN-48	16~32V	※ Check operation Supply power(24V) to terminal No.1 and connect terminal No.2 and ground
Horn	 CN-20 CN-25	DC22~28V 2A	※ Check operation Supply power(24V) to each terminal and connect ground.
Safety switch	 CS-4	24V 15A (N.C TYPE)	※ Check contact Normal : 0Ω (for terminal A-B) ∞Ω (for terminal A-C) Operating : ∞Ω (for terminal A-B) 0Ω (for terminal A-C)

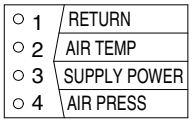
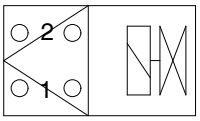
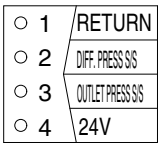
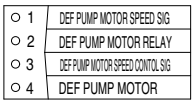
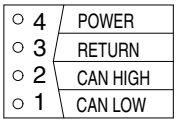
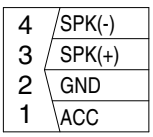
Part name	Symbol	Specifications	Check
Wiper cut switch		24V (N.O TYPE)	※ Check contact Normal : 0Ω(one pin to ground)
Receiver dryer	 CN-29	24V 2.5A	※ Check contact Normal : ∞Ω
Radio & USB player	 CN-27A	24V 2A	※ Check voltage 20~25V (for terminal 1-3, 3-8)
Washer pump	 CN-22 CN-408	24V 3.8A	※ Check contact Normal : 10.7Ω(for terminal 1-2)
Wiper motor	 CN-21	24V 2A	※ Check disconnection Normal : 7Ω(for terminal 2-6)
DC/DC Converter	 CN-138	12V 3A	※ Check voltage 24V (for terminal 1-2) 12V (for terminal 1-3)

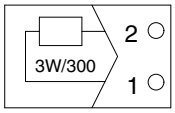
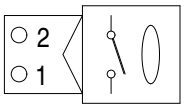
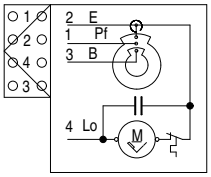
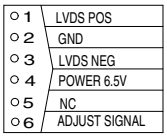
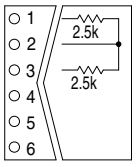
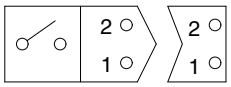
Part name	Symbol	Specifications	Check
Cigar lighter		24V 5A 1.4W	※ Check coil resistance Normal : About 1MΩ ※ Check contact Normal : ∞Ω Operating time : 5~15sec
Alternator		Denso 24V 95A	※ Check contact Normal : 0Ω (for terminal B^+-L) Normal : 24~27.5V
Starter		Denso 24V 7.8kW	※ Check contact Normal : 0.1Ω
Travel alarm		24V 0.5A	※ Check contact Normal : 5.2Ω
Aircon compressor		24V 79W	※ Check contact Normal : 13.4Ω
Start relay		24V 300A	※ Check contact Normal : 0.94Ω (for terminal 1-2)

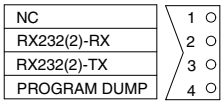
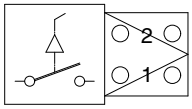
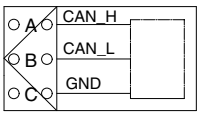
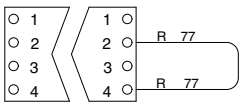
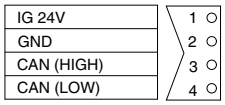
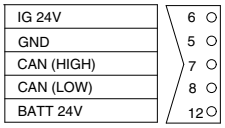
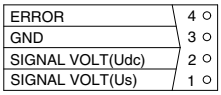
Part name	Symbol	Specifications	Check
Blower motor		24V 9.5A	※ Check resistance Normal : 2.5Ω(for terminal 1-2)
Thermistor (switch)		1˚C OFF 4˚C ON	※ Check resistance Normal : 0Ω(for terminal 1-2), the atmosphere temp : Over 4˚C
Door switch	 CS-1	24V 2W	※ Check resistance Normal : About 5MΩ
Switch (power max, one touch decel, horn, breaker)	 CS-5 CS-19 CS-26 CS-29	24V 6A	※ Check resistance Normal : ∞Ω
Circuit breaker	 CN-60 CN-95	60A (CN-60) 90A (CN-95)	※ Check disconnection Normal : 0Ω (connect ring terminal and check resist between terminal 1 and 2)
Master switch	 CS-74, CS-74B	6-36V	※ Check disconnection Normal : 0.1Ω

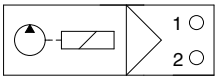
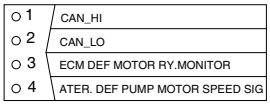
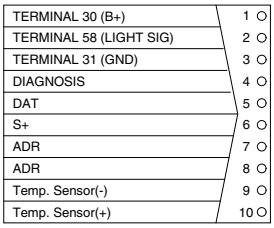
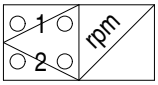
Part name	Symbol	Specifications	Check
Quick coupler buzzer	 CN-113	24V 200mA 107±4dB	
Socket	 CN-139	12V 10A	
Switch	 CS-100	24V 8A	※ Check contact Normal ON : 0Ω(for terminal 2-1, 2-3) OFF : ∞Ω(for terminal 2-1, 2-3)
Fuel heater	-#0162  #0163-  CN-96	-	
DEF/AdBlue® line heater	 CN-381 CN-382 CN-383	-	
WIF sensor	 CD-45	-	

Part name	Symbol	Specifications	Check
DEF/AdBlue® sensor	 AT1E AT2A AT9A	-	
Temperature sensor (A/C)		-	
DEF/AdBlue® fill up warning lamp (LED)	 CL-40	-	
Proportional valve sensor	 CN-246 CN-247	-	
Switch	 CS-79	24V 8A	※ Check disconnection Normal ON 1st step : 0Ω (for terminal 1-2) 2nd step : 0Ω (for terminal 1-2, 4-5) OFF 0Ω (for terminal 2-3, 5-6)
Sensor	 C12	-	

Part name	Symbol	Specifications	Check
Pressure temp sensor	 CD-10	-	
Coolant valve	 CN-384	-	
DPF pressure sensor	 AT11A	-	
SCR and DEF supply module	 AT-5A	-	
Tank level sensor	 CN-380	-	
Siren AMP	 CN-261	-	

Part name	Symbol	Specifications	Check
Resistor	 RS-1	3W	※ Check resistance Normal : 300Ω
Float switch	 CS-61	-	
Low wiper motor	 CN-407	-	
Camera (front, rear, side)	 CN-249 CN-402 CN-403 CN-404 CN-405	-	
Resistor	 CN-16B	-	
Seat belt sw	 CS-250	-	

Part name	Symbol	Specifications	Check
RMS service tool	 CS-126A	-	
Breaker switch	 CS-26A	-	
Start button	 CS-2B	-	
GPS connector	 CN-125	-	
Reader	-#0162  #0163-  CN-427	-	
Proportional valve	-#0003  CN-307	-	

Part name	Symbol	Specifications	Check
Dosing pump	 CN-269	-	
Engine side cross over connector	 CC8C	-	
Easystart timer	 CN-267	-	
Fan speed	 CD-52	-	

GROUP 4 CONNECTORS

1. CONNECTOR DESTINATION

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	AMP	12	I/conn (Frame harness-Pump PS harness)	S816-010002	S816-110002
CN-2	AMP	15	I/conn (Frame harness-Engine harness)	2-85262-1	368301-1
CN-3A	TYCO	12	I/conn (Frame harness-Pro vlv harness)	174661-2	368537-1
CN-4	AMP	16	I/conn (Console harness LH-Frame harness)	368047-1	368050-1
CN-5	DEUTSCH	60	I/conn (Side harness RH-Frame harness)	DRB16-60SAE-L018	DRB12-60PAE-L018
CN-6	AMP	16	I/conn (Console harness RH-Frame harness)	368047-1	368050-1
CN-7	AMP	15	I/conn (Console harness RH-Frame harness)	2-85262-1	368301-1
CN-8	AMP	10	I/conn (Console harness RH-Frame harness)	S816-010002	174657-2
CN-9	DEUTSCH	12	I/conn (Frame harness-AAVM harness)	DT06-12SA-P021	DT04-12PA-P021
CN-10	DEUTSCH	12	I/conn (Cab harness-Side harness RH)	DT06-12S-EP06	DT04-12PA-P021
CN-11	DEUTSCH	8	I/conn (Frame harness-Aircon harness)	DT06-8S-EP06	-
CN-12	DEUTSCH	2	I/conn (Frame harness-Boom wire harness)	DT06-2S-EP06	DT04-2P-E005
CN-13	AMP	6	I/conn (Frame harness-Boom floating harness)	174262-2	174264-2
CN-14	AMP	4	I/conn (Frame harness-Swing parking & fine control)	174257-2	174259-2
CN-15	AMP	10	I/conn (Frame harness-2-way harness)	174655-2	174657-2
CN-16	TYCO	6	Emergency engine start & speed control	S816-006002	S816-106002
CN-16B	-	6	Resistor	S816-006002	21NB-10710
CN-17	AMP	8	I/conn (Side harness RH-Wiper harness)	S816-008002	S816-108002
CN-18	TYCO	2	I/conn (Frame harness-Washer pump)	174352-2	174354-2
CN-20	DEUTSCH	2	Horn	DT06-2S-EP06	-
CN-21	AMP	6	Wiper motor	S810-006202	-
CN-22	KET	2	Washer pump	MG640605	-
CN-23	KET	2	Speaker-LH	MG610070	-
CN-24	KET	2	Speaker-RH	MG610070	-
CN-25	DEUTSCH	2	Horn	DT06-2S-EP06	-
CN-27A	KUM	16	Radio & USB player	PK145-16017	-
CN-27B	AMP	8	Radio & USB player	-	174984-2
CN-28	KET	2	Aircon compressor	MG610320	-
CN-29	KET	2	Receiver dryer	MG640795	-
CN-36	-	-	Fuse & relay box	21Q7-10910	24L1-05100
CN-45	RING-TERM	-	Starter motor B^+	S820-108000	-
CN-48	KET	1	Hour meter	2-520193-2	-
CN-51	TE	34	United MCU	2-1437285-3	3-6437285-0
CN-52	TE	34	United MCU	4-1437290-1	6473427-1
CN-53	TE	26	United MCU	1473416-1	6473427-1
CN-54	TE	34	United MCU	4-1437290-0	6437288-1

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-56A	AMP	12	Cluster	-	174663-2
CN-56B	AMP	8	Cluster	-	174984-2
CN-60	YAZAKI	2	Circuit breaker	-	7222-4220-30
CN-61	DEUTSCH	4	Fuel filler pump	DT06-4S-EP06	DT04-4P-E005
CN-62	DEUTSCH	2	Auto grease connector	DT06-2S-EP06	DT04-2P-E005
CN-66	DEUTSCH	2	Breaker solenoid	DT06-2S-EP06	-
CN-68	DEUTSCH	2	Safety solenoid	DT06-2S-EP06	-
CN-70	DEUTSCH	2	Travel high solenoid	DT06-2S-EP06	-
CN-74	RING-TERM	1	Alternator "I" terminal	S820-105000	-
CN-74	RING-TERM	1	Alternator "B+" terminal	S820-108000	-
CN-75	AMP	2	Pump EPPR	174352-2	-
CN-81	DEUTSCH	2	Travel buzzer solenoid	DT06-2S-EP06	-
CN-88	DEUTSCH	2	Power max solenoid	DT06-2S-EP06	-
CN-93	DELPHI	96	ECM	13964577	-
CN-95	YAZAKI	2	Circuit breaker	-	7222-4220-30
CN-96	AMP	4	Fuel heater	2-967325-3	2-967402-1
CN-100	KET	1	ECM ground	MG640944-5	-
CN-113	KET	2	Buzzer	MG651205-5	-
CN-125	Econoseal J	4	GPS connector	S816-004002	S816-104002
CN-125A	DEUTSCH	12	RMS	DT06-12S-P021	DT04-12PA-P021
CN-125B	DEUTSCH	8	RMS	DT06-8S	DT04-8P
CN-126	AMP	10	Service tool	174655-2	-
CN-126A	DEUTSCH	4	RMS Service tool	DT06-4S	DT04-4P
CN-133	DEUTSCH	2	Boom priority solenoid	DT06-2S-EP06	-
CN-138	FASTEN	3	DC/DC Converter	S810-003202	-
CN-139	FASTEN	2	12V socket	172434-2	-
CN-140	DEUTSCH	2	Quick coupler solenoid	DT06-2S-EP06	DT04-2P-E005
CN-141	AMP	13	Wiper motor controller	172498-1	-
CN-147	DEUTSCH	2	Fuel heater	DT06-2S-EP06	-
CN-149	DEUTSCH	2	Attach safety solenoid	DT06-2S-EP06	-
CN-150	DEUTSCH	2	2 way select solenoid	DT06-2S-EP06	-
CN-154	DEUTSCH	2	Cooling fan	DT06-2S-EP06	-
CN-156	DEUTSCH	2	Seat heat	DT06-2S	DT04-2P
CN-157	AMP	1	Antena power	S822-014002	-
CN-173	DEUTSCH	3	Resistor	DT06-3S-EP06	DT04-3P-EP10
CN-174	DEUTSCH	3	Resistor	DT06-3S-EP06	DT04-3P-E005
CN-237	DEUTSCH	2	Attach conflux solenoid	DT06-2S-EP06	-
CN-242	DEUTSCH	2	P1 regulator EPPR	DT06-2S-EP06	-
CN-243	DEUTSCH	2	P2 regulator EPPR	DT06-2S-EP06	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-245	KET	2	PTC power	MG620558	-
CN-246	DEUTSCH	3	Proportional valve-RH	DT06-3S	DT04-3P
CN-246A/B	DEUTSCH	4	I/conn (Engine block heater harness -Timer harness)	DT06-4S-EP06	DT04-4P-EP06
CN-247	DEUTSCH	3	Proportional valve-LH	DT06-3S	DT04-3P
CN-249	DEUTSCH	6	Rear view camera	DT06-6S-EP06	DT04-6P-E005
CN-258	KET	1	Air compressor power	MG640944-5	MG650943-5
CN-260	AMP	2	Siren lamp	174352-2	174354-2
CN-260	MTA	2	Engine block heater fuse box	03 01315	-
CN-261	MTA	2	Engine block heater fuse box	03 01305	-
CN-261	KET	2	Siren AMP	MG610047	-
CN-262	DEUTSCH	2	I/conn (Frame harness - Straight travel solenoid harness)	DT06-2S-EP06	DT04-2P-E005
CN-262A	DEUTSCH	2	Travel solenoid 1	DT06-2S-EP06	-
CN-262B	DEUTSCH	2	Travel solenoid 2	DT06-2S-EP06	-
CN-263	DEUTSCH	2	Air compressor relay	DT06-2S-EP06	DT04-2P-E005
CN-265	VW	8	Engine block heater controller	3A0973734	-
CN-267	MOLEX	10	Easy start timer	15-97-5101	-
CN-269	TE	2	Dosing pump	282189-1	-
CN-305	DEUTSCH	12	Proportional-Connector-1	DTM06-12SA	-
CN-306	DEUTSCH	12	Proportional-Connector-2	DTM06-12SB	-
CN-307	DEUTSCH	3	Proportional-Service tool	DT06-3S-EP06	DT06-3P-E005
CN-308	AMP	4	Proportional-PVG32	2-967059-1	-
CN-309	DEUTSCH	2	Proportional-EPPR valve A2	DT06-2S-EP06	-
CN-310	DEUTSCH	2	Proportional-EPPR valve A1	DT06-2S-EP06	-
CN-363	AMP	12	Jog dial module	174045-2	-
CN-365	DEUTSCH	2	Attach relief EPPR valve 1(LH)	DT06-2S-EP06	DT04-2P-E005
CN-366	DEUTSCH	2	Attach relief EPPR valve 2(RH)	DT06-2S-EP06	DT04-2P-E005
CN-367	KET/DEUTSCH	2	Boom down floating solenoid	85202-1	DT04-2P-E005
CN-368	DEUTSCH	2	Boom up floating solenoid	DT06-2S-EP06	DT04-2P-E005
CN-369	DEUTSCH	2	Boom down cut off solenoid	DT06-2S-EP06	DT04-2P-E005
CN-370	DEUTSCH	2	Swing fine control solenoid	DT06-2S-EP06	DT04-2P-E005
CN-376	TYCO	23	Membrane controller	7706087-2	-
CN-380	DEUTSCH	4	DEF/AdBlue® tank level sensor	DT06-4S-EP06	-
CN-381	DEUTSCH	2	DEF line heater 3	DT06-2S-EP06	-
CN-382	DEUTSCH	2	DEF line heater 2	DT06-2S-EP06	-
CN-383	DEUTSCH	2	DEF line heater 1	DT06-2S-EP06	-
CN-384	TYCO	2	Coolant valve	-	1-967325-3
CN-401	TE	35	AAVM controller	776164-1	-
CN-402	DEUTSCH	6	Front view camera	DT06-6S-P021	DT04-6P-P021
CN-403	DEUTSCH	6	Rear view camera	DT06-6S-EP06	DT04-6P-P021

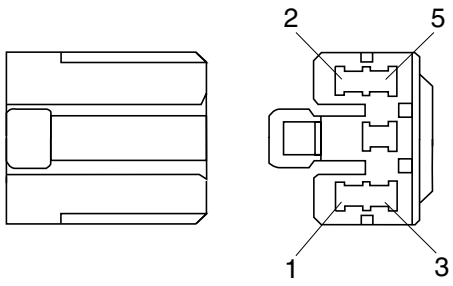
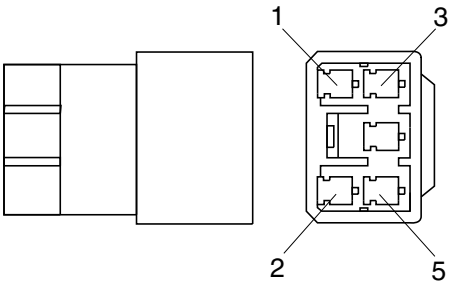
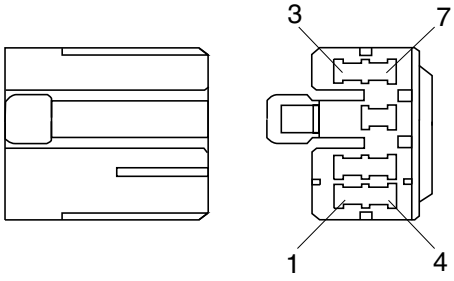
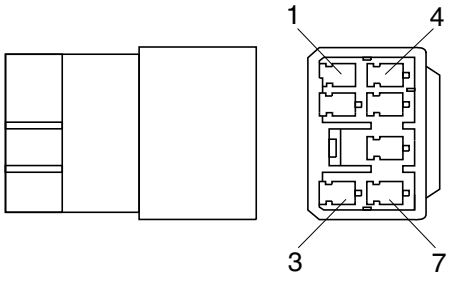
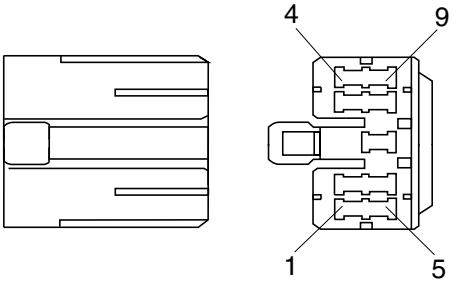
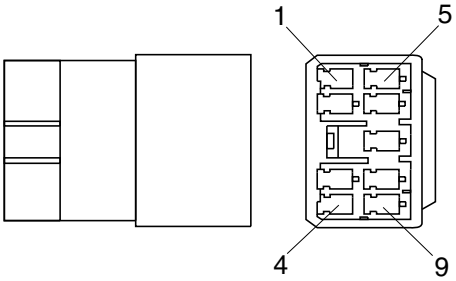
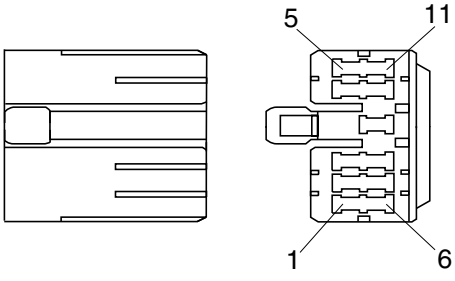
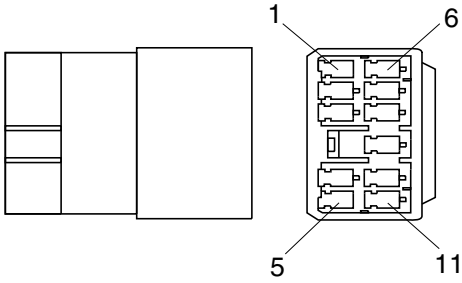
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-404	DEUTSCH	6	LH view camera	DT06-6S-EP06	DT04-6P-EP14
CN-405	DEUTSCH	6	RH view camera	DT06-6S-EP06	DT04-6P-EP14
CN-406	DEUTSCH	3	Service tool	DT06-3S-EP06	DT04-3P-E005
CN-407	DEUTSCH	4	Low wiper motor	DT06-4S-EP06	DT04-4P-E005
CN-408	KET	4	Washer tank	MG640605	-
CN-419	DEUTSCH	2	Swing parking-A1	DT06-2S-EP06	-
CN-420	DEUTSCH	2	Swing parking-A2	DT06-2S-EP06	-
CN-421	DEUTSCH	2	Swing parking-A3	DT06-2S-EP06	-
CN-427	MOLEX	4	Reader-RMS	039012040	026013096
		12		5557-12R	5559-12P
CN-430	TYCO/AMP	12	I/conn (Frame harness-Aftertreatment harness)	174661-2	S816-112002
AT1E	TYCO	4	Inlet Nox sensor	2-1418390-1	-
AT2A	TYCO	4	Outlet Nox sensor	1-1418390-1	-
AT-5A	TYCO	4	SCR supply module	2-1703639-1	-
AT-6A	TYCO	8	DEF/AdBlue® dosing module	1-141-8479-1	-
AT9A	TYCO	4	SCR temp sensor	4-1418390-1	-
AT11A	FRAMATOME	4	Diff perssure sensor	F715600	-
CC8C	DEUTSCH	4	Engine side cross over connector	DT06-4S-EP06	-
C-12	FCI	4	Air cleaner (ECM J1)	-	54200419
· Relay					
CR-1	RING-TERM	-	Battery relay	ST710289-2	-
CR-2	-	5	Horn relay	-	-
CR-4	-	5	Working lamp relay	-	-
CR-5	-	5	Anti restart relay	-	-
CR-7	-	5	Aircon compressor relay	-	-
CR-9	-	5	Cabin lamp relay	-	-
CR-13	-	5	Head lamp relay	-	-
CR-23	KET	2	Start relay	S814-002001	S814-102001
CR-24	RING TERM	1	Preheat relay	S822-014000	-
CR-35	-	5	Power relay	-	-
CR-36	-	5	Preheat relay	-	-
CR-39	-	5	Starter lock out relay	-	-
CR-46	-	5	Fuel warmer relay	-	-
CR-48	-	5	Safety relay	-	-
CR-50	-	5	NOx sensor relay	-	-
CR-51	-	5	DEF/AdBlue® module relay	-	-
CR-52	-	5	Line heater relay	-	-
CR-85	-	5	Beacon lamp relay	-	-

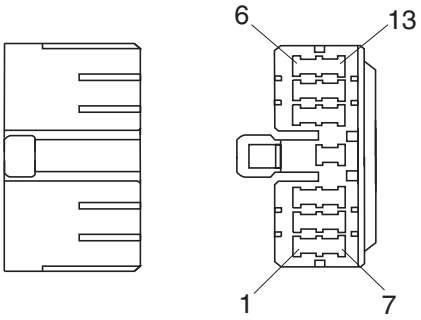
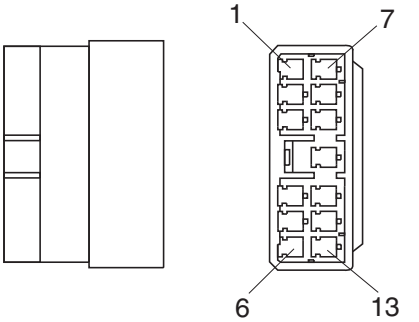
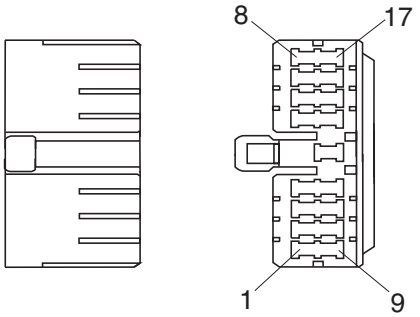
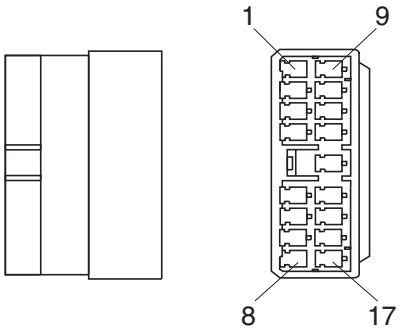
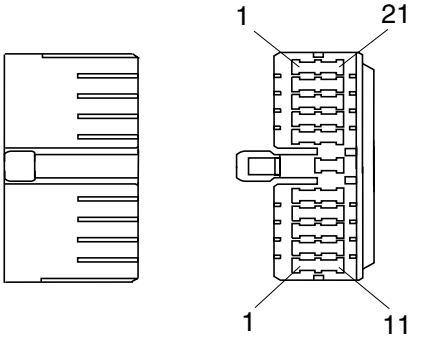
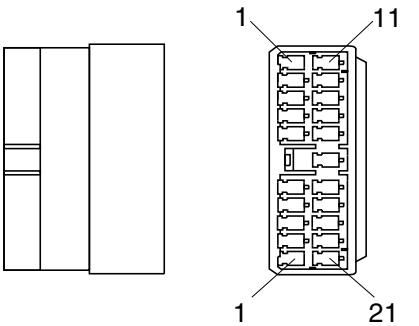
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
· Switch					
CS-1	SHUR	1	Door switch	S822-014002	S822-114002
CS-2A	WP	6	Start switch	S814-006100	-
CS-2B	DEUTSCH	3	Start button	DT06-3S-EP06	DT04-3P-E005
CS-2C	KET	3	Button start	MG651032	-
CS-2D	KET	3	Button start key	-	MG641035
CS-4	DEUTSCH	3	Safety switch	DT06-3S	-
CS-5	DEUTSCH	2	Horn switch	-	DT04-2P
CS-19	DEUTSCH	2	One touch decel switch	-	DT04-2P
CS-26	DEUTSCH	2	Breaker switch	DT06-2S	-
CS-26A	AMP	2	Breaker pedal switch	S816-002002	S816-102002
CS-29	DEUTSCH	2	Power max switch	DT06-2S	-
CS-33	AMP	6	Emergency engine stop switch	S816-006002	S816-106002
CS-52	CARLING	10	2 Piece switch	VC2-01	-
CS-53	AMP	1	Wiper cut switch	S822-014002	-
CS-61	AMP	2	Floating switch	174352-2	174354-2
CS-67	CARLING	10	Quick coupler switch	VC2-01	-
CS-73	CARLING	10	Swing lock switch	VC2-01	-
CS-73A	CARLING	10	Swing fine switch	VC2-01	-
CS-74	DEUTSCH	2	Master switch	DT06-2S-EP06	-
CS-74B	DEUTSCH	2	Master switch	DT06-2S-EP06	-
CS-79	CARLING	10	Lower wiper switch	VC2-01	-
CS-83	CARLING	10	Swing lock switch	VC2-01	-
CS-99	CARLING	10	Air compressor switch	VC2-01	-
CS-100	CARLING	10	Exhaust system cleaning switch	VC2-01	-
CS-107	CARLING	10	Travel straight switch	VC2-01	-
CS-108	CARLING	10	Auto grease switch	VC2-01	-
CS-111	CARLING	10	Boom floating switch	VC2-01	-
CS-250	DEUTSCH	2	Seat switch	DT06-2S	-
· Light					
CL-1	KET	3	Room lamp	MG651032	-
CL-2	AMP	1	Cigar lighter	S822-014002	S822-114002
				S822-014002	-
CL-3	DEUTSCH	2	Head lamp-LH	DT06-2S-EP06	DT04-2P
CL-4	DEUTSCH	2	Head lamp-RH	DT06-2S-EP06	DT04-2P
CL-5	DEUTSCH	2	Work lamp-LH	DT06-2S-EP06	DT04-2P
CL-6	DEUTSCH	2	Work lamp-RH	DT06-2S-EP06	DT04-2P
CL-7	SHUR	1	Beacon lamp	S822-014002	S822-114002
CL-8	DEUTSCH	2	Cab lighter-LH	DT06-2S-EP06	DT04-2P

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CL-9	DEUTSCH	2	Cab lighter-RH	DT06-2S-EP06	DT04-2P
CL-10	DEUTSCH	2	Cab lighter - RH	DT06-2S-EP06	DT04-2P
CL-24	DEUTSCH	2	Head lamp-rear	DT06-2S-EP06	DT04-2P-E005
CL-36	DEUTSCH	2	Work lamp - LH	DT06-2S-EP06	-
CL-37	DEUTSCH	2	Work lamp - RH	DT06-2S-EP06	-
CL-40	DEUTSCH	2	DEF/AdBlue® lamp	DT06-2S-EP06	-
Sensor, sendor					
CD-1	AMP	2	Hydraulic oil temp sender	85202-1	-
CD-2	DEUTSCH	2	Fuel sender	DT06-2S-EP06	-
CD-6	DEUTSCH	3	Travel pilot pressure switch	DT06-3S-EP06	-
CD-7	DEUTSCH	3	Working pilot pressure switch	DT06-3S-EP06	-
CD-10	SUMITOMO	4	Pressure & temperature sensor	6098-0144	-
CD-10A	AMP	2	Air cleaner switch (-#00040)	85202-1	-
CD-16	AMP	3	Water level sensor	1211 0293	-
CD-24	DEUTSCH	3	Swing pilot pressure sensor	DT06-3S-EP06	-
CD-31	DEUTSCH	3	Overload pressure sensor	DT06-3S-EP06	DT04-3P-E005
CD-32	DEUTSCH	3	Boom up pilot pressure sw	DT06-3S-EP06	-
CD-35	DEUTSCH	3	Bucket in pilot pressure sw	DT06-3S-EP06	-
CD-42	DEUTSCH	3	Pump pressure 1	DT06-3S-EP06	-
CD-43	DEUTSCH	3	Pump pressure 2	DT06-3S-EP06	-
CD-44	DEUTSCH	3	Pump pressure 3	DT06-3S-EP06	-
CD-45	DEUTSCH	2	WIF sensor	DT06-2S-EP06	-
CD-52	AMP	2	Fan speed	174352-2	-
CD-69	DEUTSCH	3	Attach pressure sensor	DT06-3S-EP06	-
CD-70	DEUTSCH	3	N1 pressure sensor	DT06-3S-EP06	-
CD-71	DEUTSCH	3	N2 pressure sensor	DT06-3S-EP06	-
CD-85	DEUTSCH	3	Boom down pilot pressure sw	DT06-3S-EP06	-
CD-86	DEUTSCH	3	Arm out pilot pressure sw	DT06-3S-EP06	-
CD-87	DEUTSCH	3	Bucket out pilot pressure sw	DT06-3S-EP06	-
CD-90	DEUTSCH	3	Arm in pilot pressure sw	DT06-3S-EP06	-
CD-124	DEUTSCH	3	Boom cylinder rod pressure sensor	DT06-3S-EP06	-

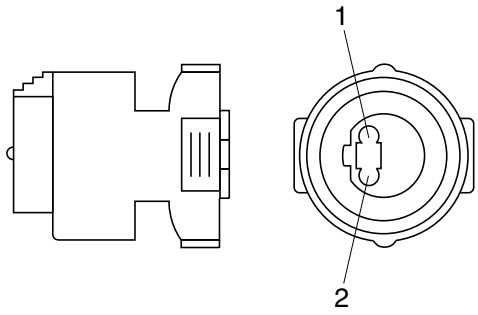
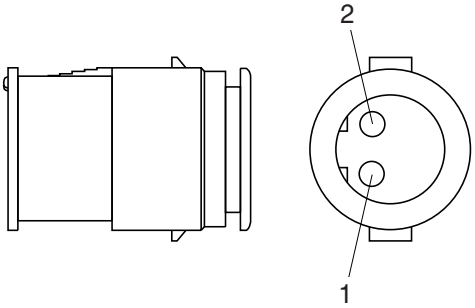
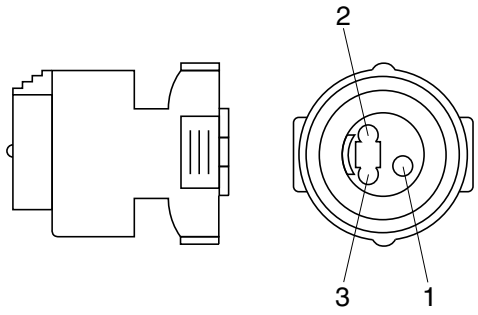
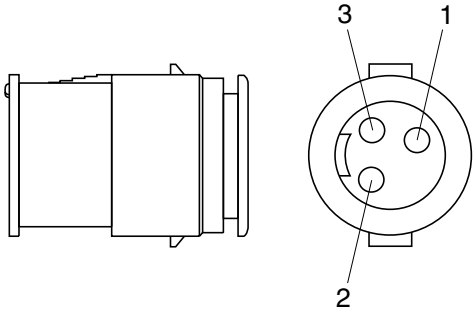
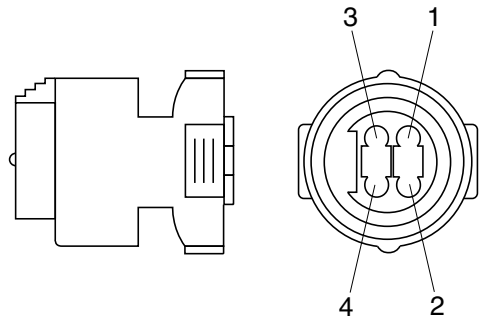
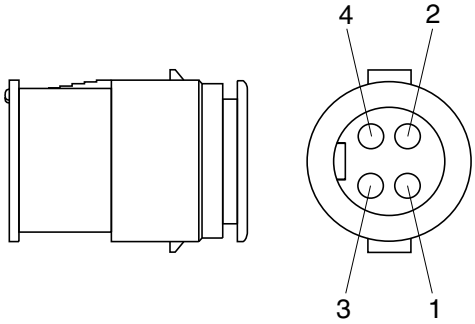
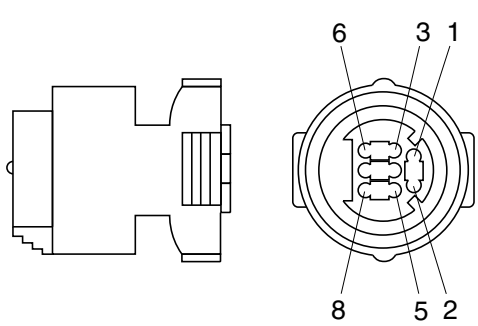
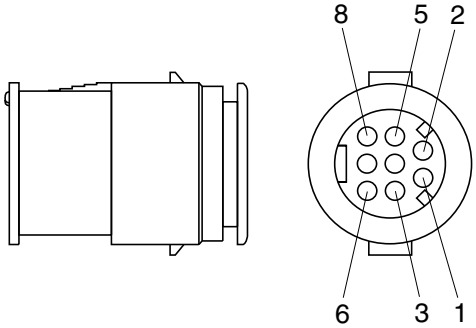
2. CONNECTION TABLE FOR CONNECTORS

1) PA TYPE CONNECTOR

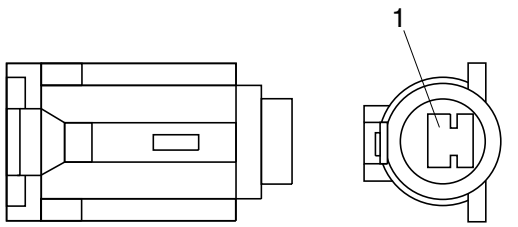
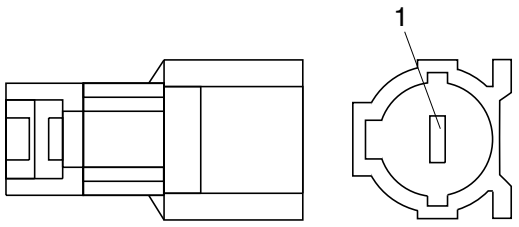
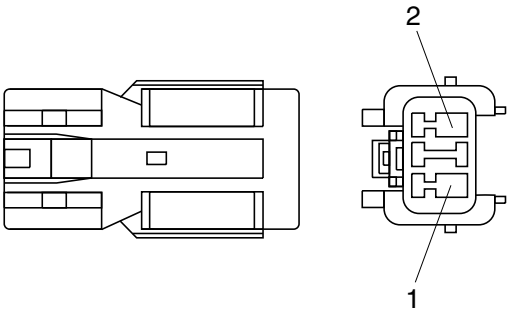
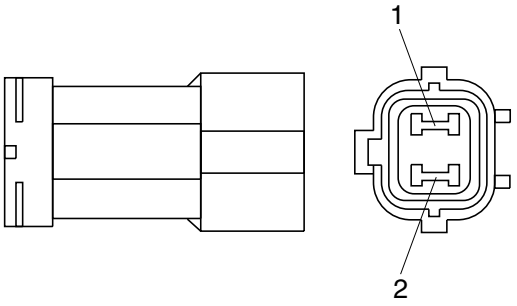
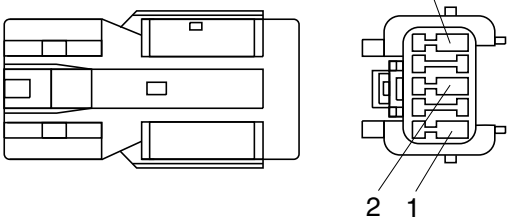
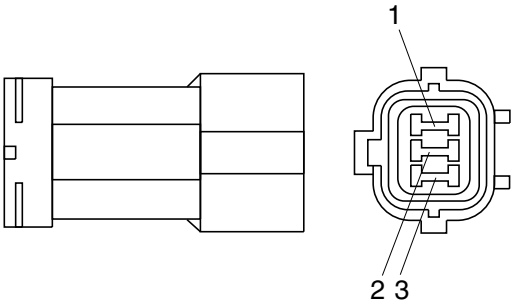
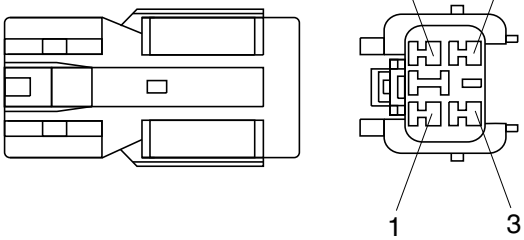
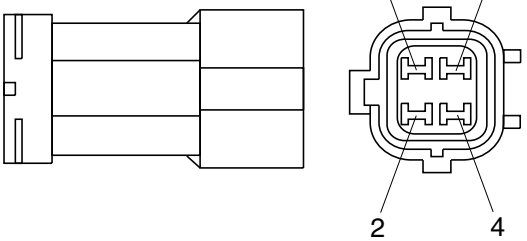
No. of pin	Receptacle connector (female)	Plug connector (male)
5	 S811-005002	 S811-105002
7	 S811-007002	 S811-107002
9	 S811-009002	 3S811-109002
11	 S811-011002	 S811-111002

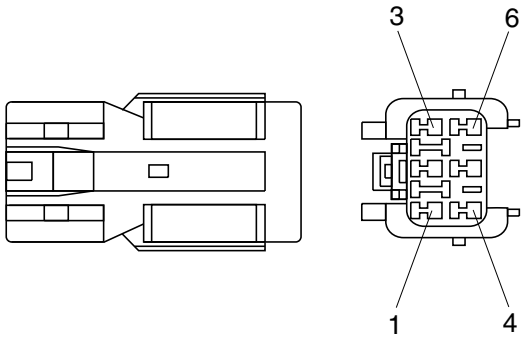
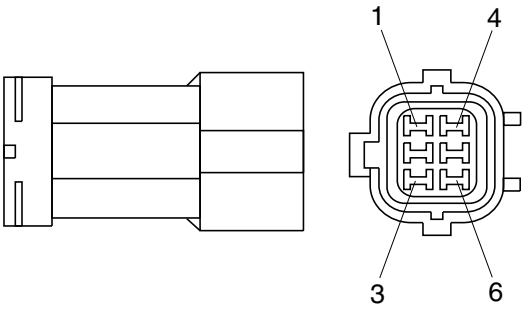
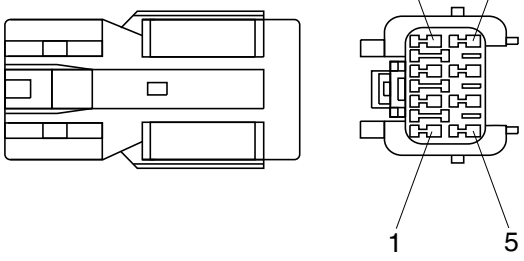
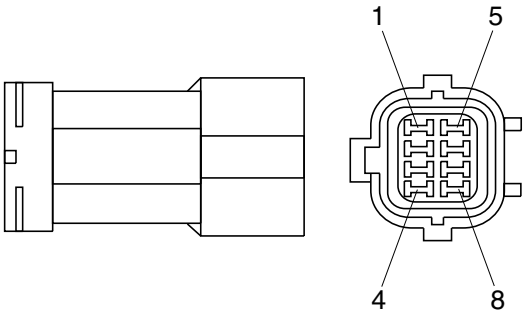
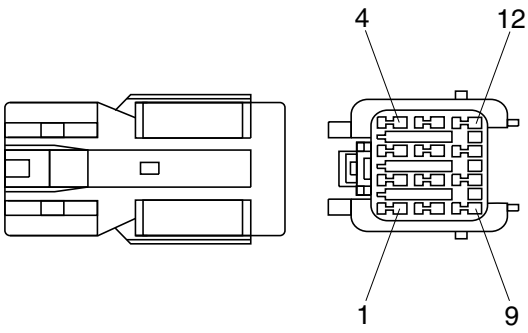
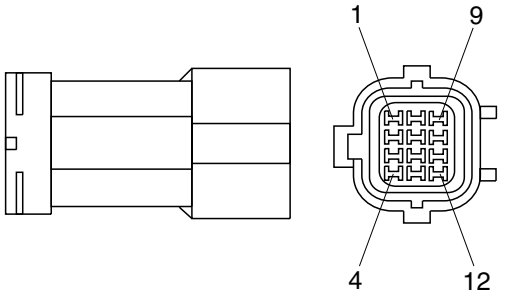
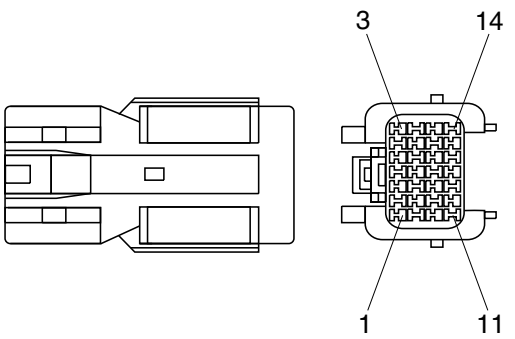
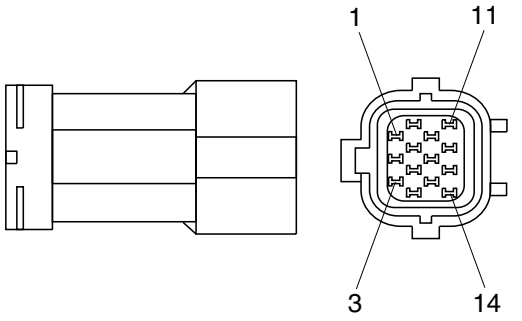
No. of pin	Receptacle connector (female)	Plug connector (male)
13	 S811-013002	 S811-113002
17	 S811-017002	 S811-117002
21	 S811-021002	 S811-121002

2) J TYPE CONNECTOR

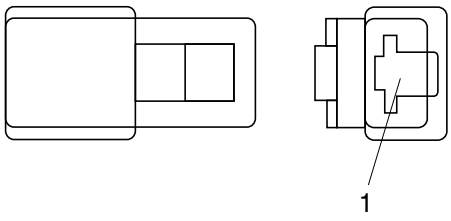
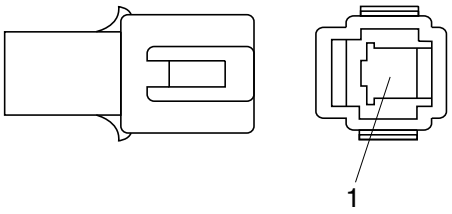
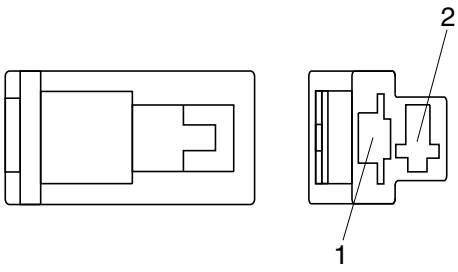
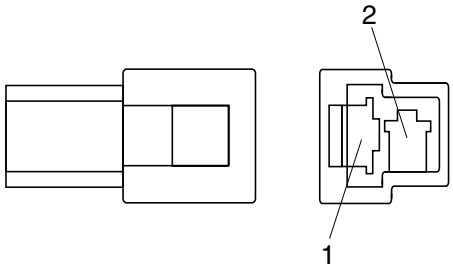
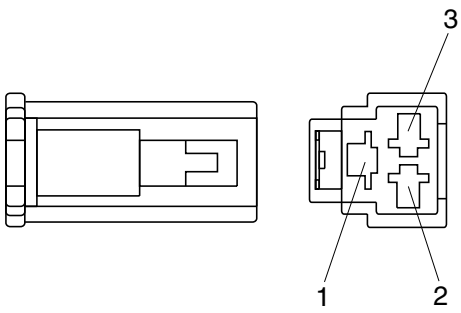
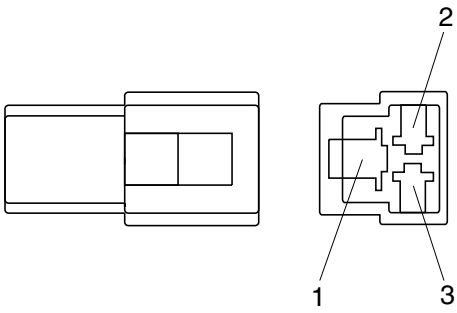
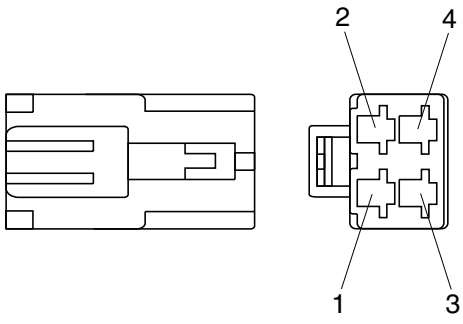
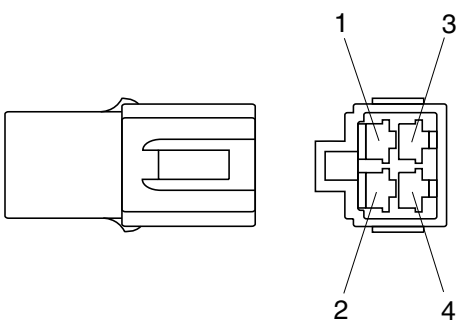
No. of pin	Receptacle connector (female)	Plug connector (male)
2	 S816-002001	 S816-102001
3	 S816-003001	 S816-103001
4	 S816-004001	 S816-104001
8	 S816-008001	 S816-108001

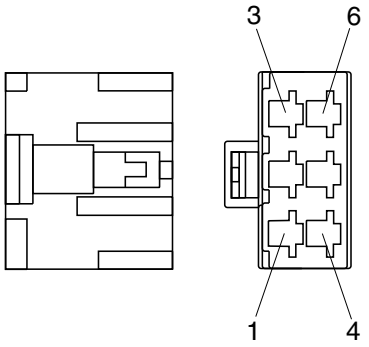
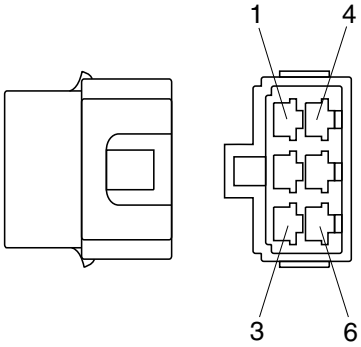
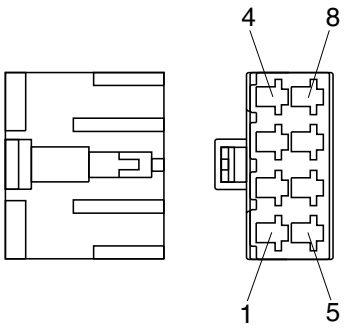
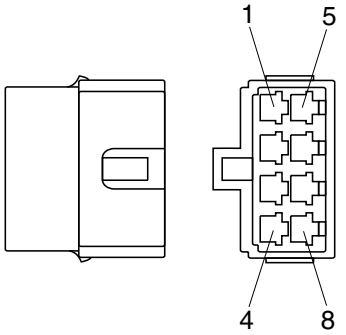
3) SWP TYPE CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
1	 S814-001000	 S814-101000
2	 S814-002000	 S814-102000
3	 S814-003000	 S814-103000
4	 S814-004000	 S814-104000

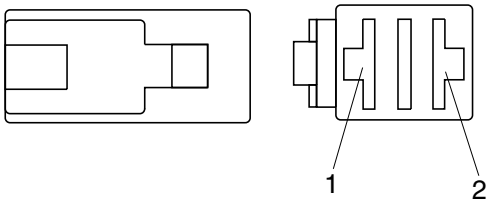
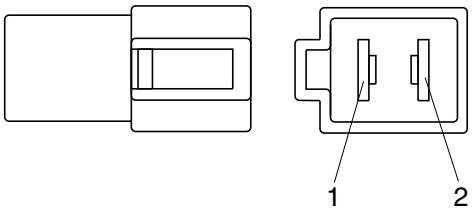
No. of pin	Receptacle connector (female)	Plug connector (male)
6	 S814-006000	 S814-106000
8	 S814-008000	 S814-108000
12	 S814-012000	 S814-112000
14	 S814-014000	 S814-114000

4) CN TYPE CONNECTOR

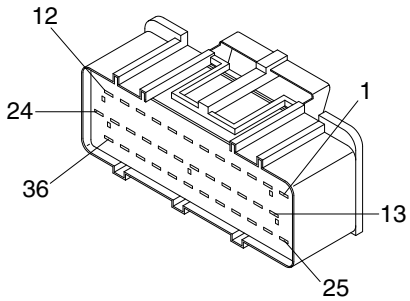
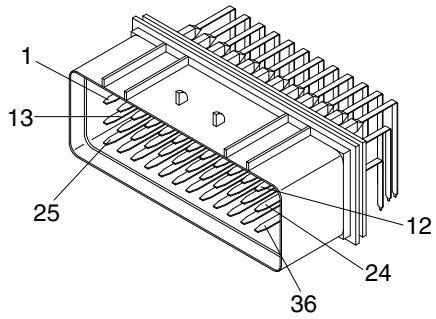
No. of pin	Receptacle connector (female)	Plug connector (male)
1	 S810-001202	 S810-101202
2	 S810-002202	 S810-102202
3	 S810-003202	 S810-103202
4	 S810-004202	 S810-104202

No. of pin	Receptacle connector (female)	Plug connector (male)
6	 S810-006202	 S810-106202
8	 S810-008202	 S810-108202

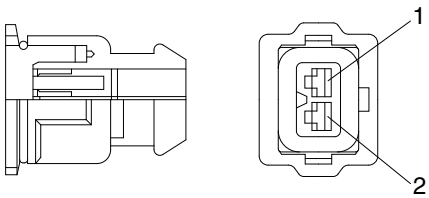
5) 375 FASTEN TYPE CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 S810-002402	 S810-102402

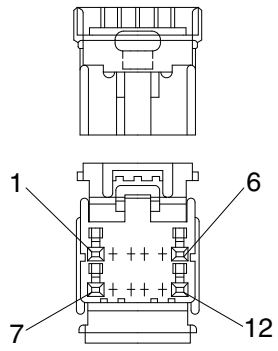
6) AMP ECONOSEAL CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
36	 344111-1	 344108-1

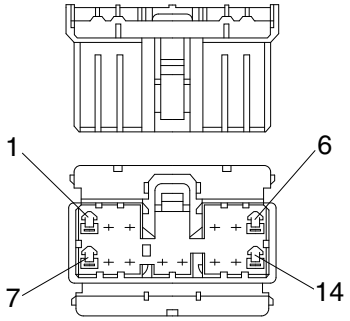
7) AMP TIMER CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 85202-1	

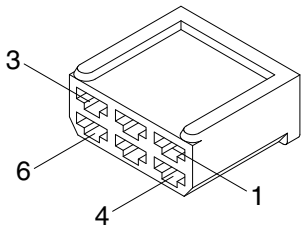
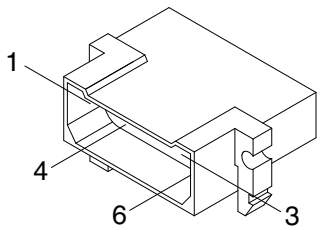
8) AMP 040 MULTILOCK CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
12	 174045-2	

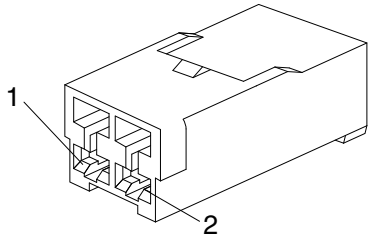
9) AMP 070 MULTILOCK CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
14	 173852	

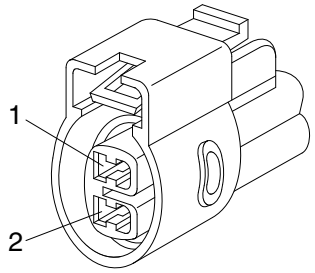
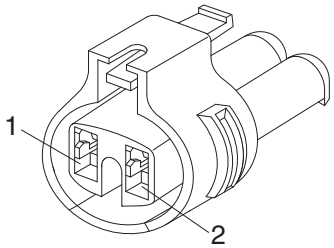
10) AMP FASTIN - FASTON CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
6	 925276-0	 480003-9

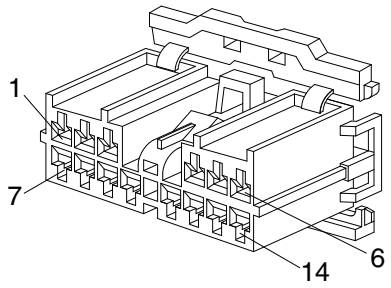
11) KET 090 CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 MG610070	

12) KET 090 WP CONNECTORS

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 MG640605	
2	 MG640795	

13) KET SDL CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
14	 MG610406	

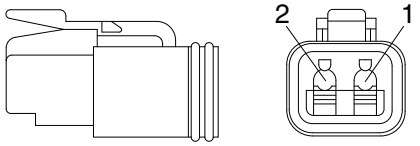
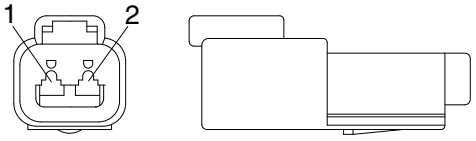
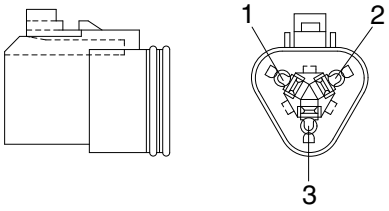
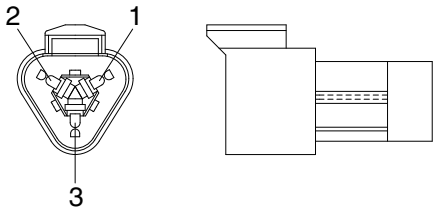
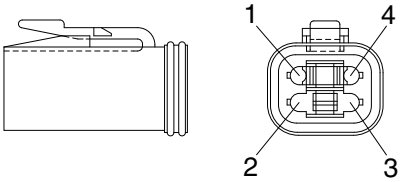
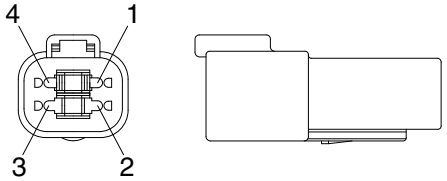
14) DEUTSCH DT CONNECTORS

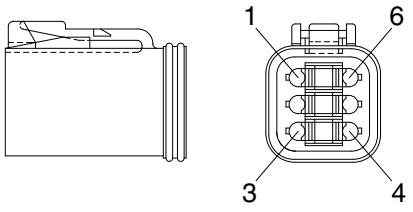
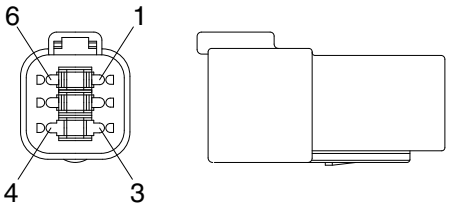
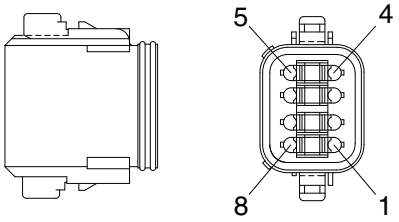
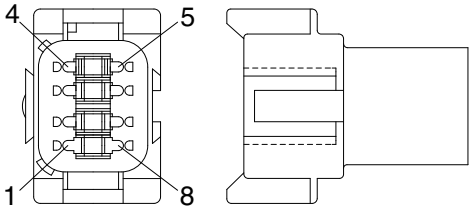
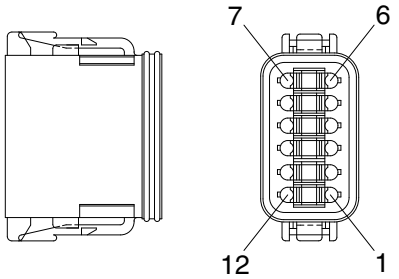
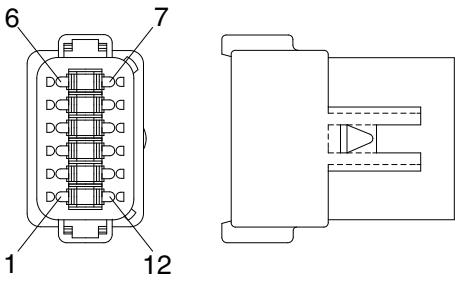
DT 06 - 3S - ★★★★

- ★★★★ : Modifications (see below)
- 3S : Number of contacts (P : Pin, S : Socket)
- 06 : Receptacle, 04 : Plug
- DT : Deutsch connectors

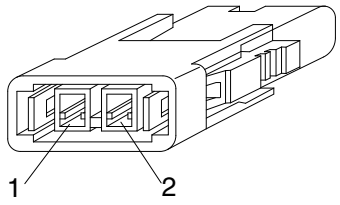
※ Modification

E003 : Standard end cap - gray
E004 : Color of connector to be black
E005 : Combination - E004 & E003
EP04 : End cap
EP06 : Combination P012 & EP04
P012 : Front seal enhancement - connectors color to black for 2, 3, 4 & 6pin

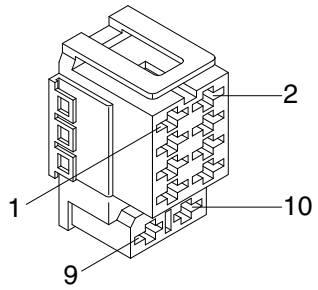
No. of pin	Receptacle connector (female)	Plug connector (male)
2	 DT06-2S	 DT04-2P
3	 DT06-3S	 DT04-3P
4	 DT06-4S	 DT04-4P

No. of pin	Receptacle connector (female)	Plug connector (male)
6	 DT06-6S	 DT04-6P
8	 DT06-8S	 DT04-8P
12	 DT06-12S	 DT04-12P

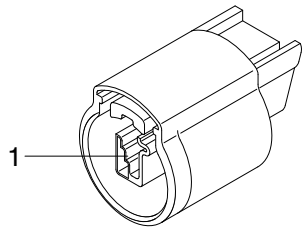
15) MOLEX 2CKTS CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 35215-0200	

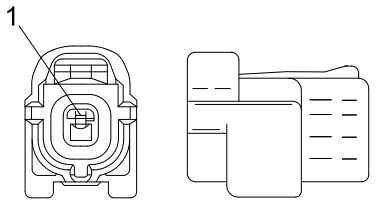
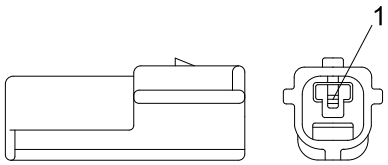
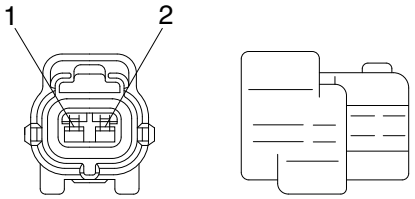
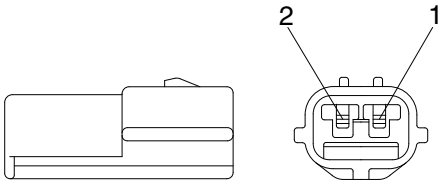
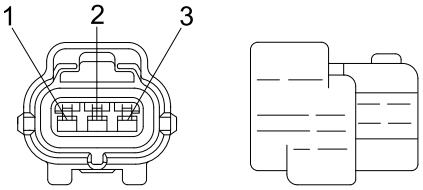
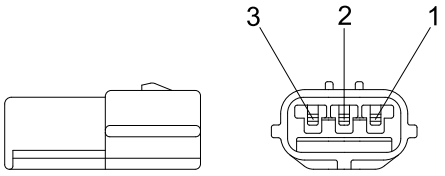
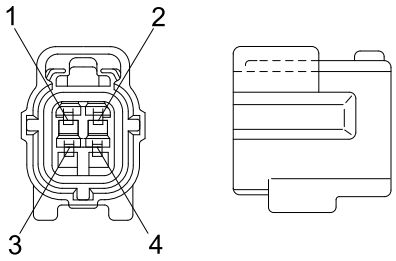
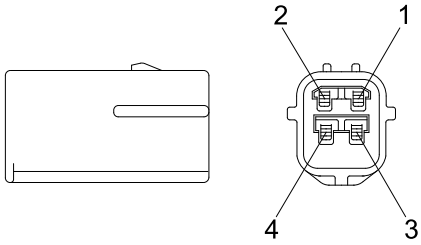
16) ITT SWF CONNECTOR

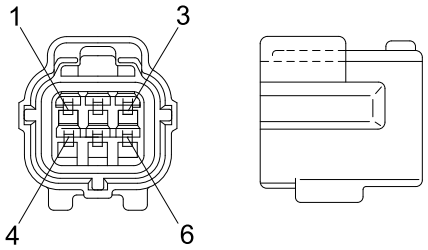
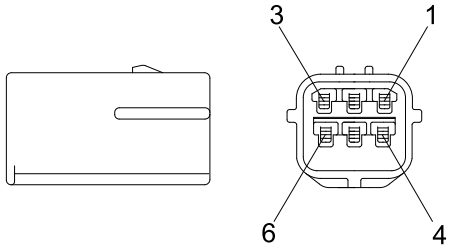
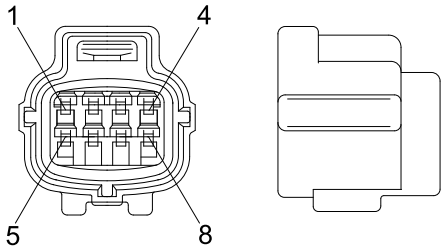
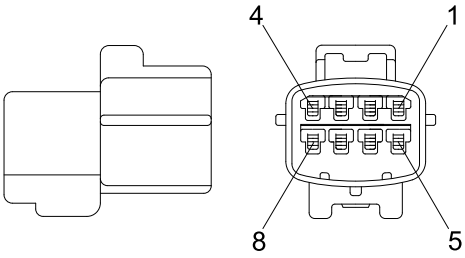
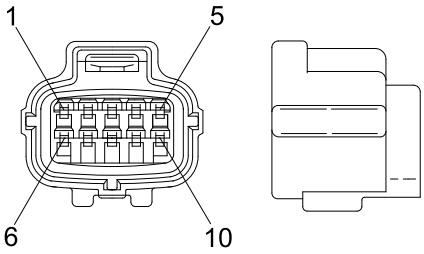
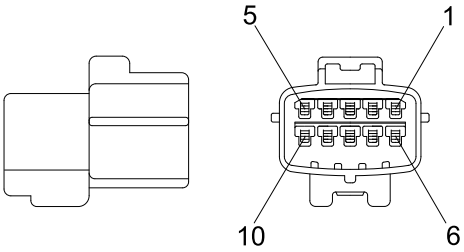
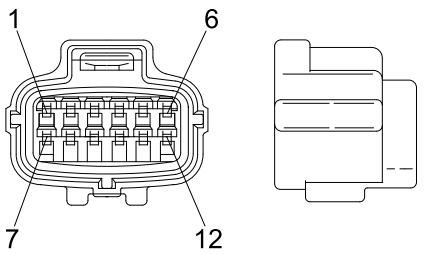
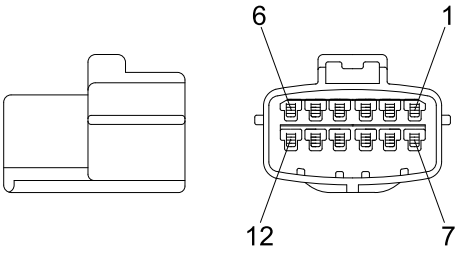
No. of pin	Receptacle connector (female)	Plug connector (male)
10	 SWF593757	

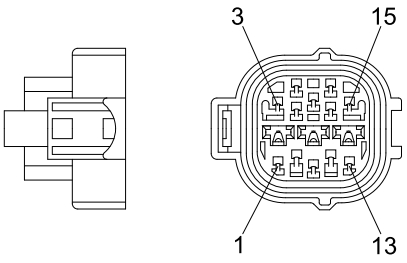
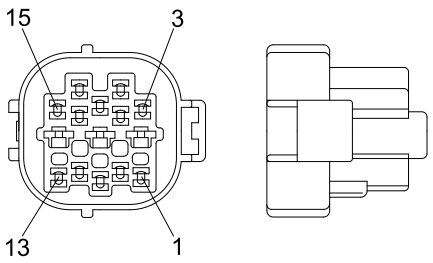
17) MWP NMWP CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
1	 NMWP01F-B	

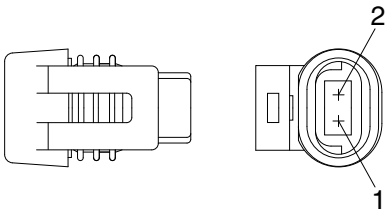
18) ECONOSEAL J TYPE CONNECTORS

No. of pin	Receptacle connector (female)	Plug connector (male)
1	 S816-001002	 S816-101002
2	 S816-002002	 S816-102002
3	 S816-003002	 S816-103002
4	 S816-004002	 S816-104002

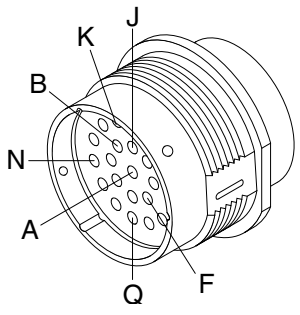
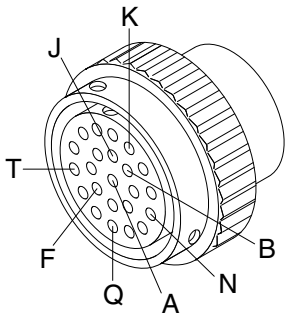
No. of pin	Receptacle connector (female)	Plug connector (male)
6	 S816-006002	 S816-106002
8	 S816-008002	 S816-108002
10	 S816-010002	 S816-110002
12	 S816-012002	 S816-112002

No. of pin	Receptacle connector (female)	Plug connector (male)
15	 368301-1	 2-85262-1

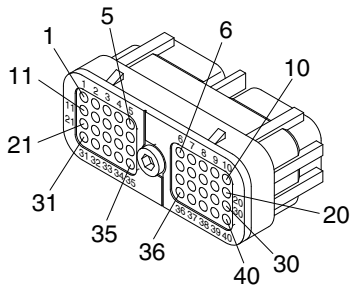
19) METRI-PACK TYPE CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 12040753	

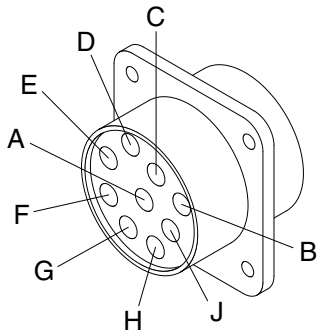
20) DEUTSCH HD30 CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
23	 HD36-24-23SN	 HD34-24-23PN

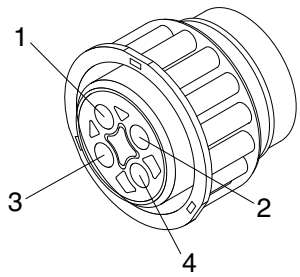
21) DEUTSCH MCU CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
40	 DRC26-40SA/B	

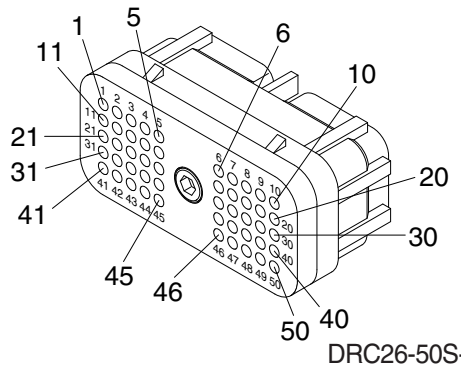
22) DEUTSCH SERVICE TOOL CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
9	 HD10-9-96P	

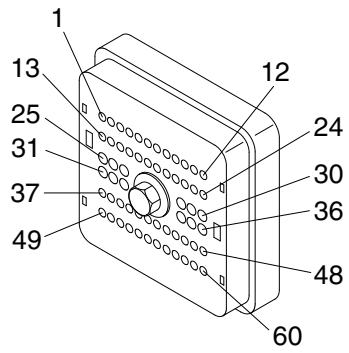
23) AMP FUEL WARMER CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
4	 2-967325-3	

24) DEUTSCH ENGINE ECM CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
50	 DRC26-50S-04	

25) DEUTSCH INTERMEDIATE CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
60	 DRB16-60SAE-L018	